DOCUMENT RESUME

ED 474 314 CE 084 694

AUTHOR	Papadaki-Klavdianou, A.; Menkisoglou-Spiroudi, O.; Tsakiridou, E.
TITLE	Quality of Agricultural Products and Protection of the Environment: Training, Knowledge Dissemination and Certification. Synthesis Report of a Study in Five European Countries. CEDEFOP Reference Series.
INSTITUTION	European Centre for the Development of Vocational Training, Thessaloniki (Greece).
REPORT NO	TI-49-02-361-EN-C; CEDEFOP-Ser-38
ISBN	ISBN-92-896-0174-4
PUB DATE	2003-00-00
NOTE	197p.
AVAILABLE FROM	Bernan Associates, Cedefop, P.O. Box 22427 20706-4391 GR 55102 Thessaloniki (3027 EN; 25 Euros). Web site: http://www.cedefop.eu.int/.
PUB TYPE	Information Analyses (070)
EDRS PRICE	EDRS Price MF01/PC08 Plus Postage.
DESCRIPTORS	Adult Education; Agribusiness; Agricultural Education; Agricultural Occupations; *Agricultural Production; Case Studies; Certification; *Conservation (Environment); Consumer Education; *Curriculum Design; Curriculum Development; Developed Nations; Discourse Analysis; Educational Finance; Educational Policy; *Environmental Education; Foreign Countries; Information Dissemination; Interviews; Marketing; Policy Formation; Postsecondary Education; Productivity; Program Implementation; Public Policy; Qualifications; Research Utilization; Secondary Education; Transfer of Training; *Vocational Education; Vocational Education Teachers
IDENTIFIERS	*European Union; Germany; Greece; Netherlands; *Organic Farming; Portugal; Spain; Sustainable Agriculture

ABSTRACT

This book examines existing European environmental education and agricultural practices friendly to the environment. Focus is on studies conducted in five countries--Germany, Greece, the Netherlands, Portugal, and Spain--that aimed to define new knowledge qualifications related to environmental issues in producing alternative agricultural products without agrochemicals (organic farming). How these qualifications can best be acquired, including curricula design, are discussed. Chapter 1 is an introduction to the background, objectives, and design of the study. Chapters 2 and 3 describe European policies related to agriculture and employment and the practice of organic farming. Chapter 4 examines the state of agricultural education, environmental education, and vocational training within the European Union. Chapter 5 discusses processing, distribution and consumer information for organic products, specifically wine, olive oil, and fruit juice. Chapter 6, which constitutes over 1/3 of the book, presents the five national case studies. These include interviews with agronomists; agricultural inspectors; agricultural extension workers; teachers and directors of agricultural training centers; and retailers and consumers of organic products. Chapter 7 presents conclusions and suggestions for the

Reproductions supplied by EDRS are the best that can be made
from the original document.

formation of a common policy. Chapter 8 is a summary of the study. (Contains 75 references and 55 tables and figures.) A list of 10 Web site addresses is appended. (AJ)

Reproductions supplied by EDRS are the best that can be made
from the original document.

CEDEFOP

ED 474 314

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

B. Brenner

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Quality of agricultural products and protection of the environment: training, knowledge dissemination and certification

BEST COPY AVAILABLE

Synthesis report of a study in five European countries

084694

EN

2

Quality of agricultural products and protection of the environment: training, knowledge dissemination and certification

Synthesis report of a study in five European countries

Papadaki-Klavdianou A.
Menkisoglou-Spiroudi O.
Tsakiridou E.

Cedefop Reference series; 38
Luxembourg: Office for Official Publications of the European Communities, 2003

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (http://europa.eu.int).

Cataloguing data can be found at the end of this publication.

Luxembourg:
Office for Official Publications of the European Communities, 2003

ISBN 92-896-0174-4
ISSN 1608-7089

© European Centre for the Development of Vocational Training, 2003
All rights reserved.

Designed by Colibri Ltd. – Greece
Printed in Greece

The **European Centre for the Development of Vocational Training** (Cedefop) is the European Union's reference Centre for vocational education and training. We provide information on and analyses of vocational education and training systems, policies, research and practice. Cedefop was established in 1975 by Council Regulation (EEC) No. 337/75.

Europe 123
GR-570 01 Thessaloniki (Pylea)

Postal address: PO Box 22427
GR-551 02 Thessaloniki

Tel. (30) 23 10 49 01 11, Fax (30) 23 10 49 00 20
E-mail: info@cedefop.eu.int
Homepage: www.cedefop.eu.int
Interactive website: www.trainingvillage.gr

Papadaki-Klavdianou A., *Professor,*
Menkisoglou-Spiroudi O., *Assist. Professor,*
Tsakiridou E., Agronomist, *Researcher, Ph.D. candidate*

in collaboration with:
Germany: H. Boland, Professor; C. Retter,
J. Schwarte; Ute Bischoff
Justus – Liebig University of Giessen
Portugal: A. Cristovao, Professor; T. Koehnen;
A. Strecht; D. Vilas Boas
University of Tras-os-Montes e Alto Duro
Spain: A. Colom Gorgues, Professor;
Z. Saez Olivito, Professor; A. Berga Monge;
J.M. Guinovart; A. Pardo
University of Lleida
The Netherlands: J. Warmerdam; S. van den Berg
Institute for Applied Social Sciences

Edited by: Cedefop
Tina Bertzeletou, *Project manager*

Published under the responsibility of:
Johan van Rens, *Director*
Stavros Stavrou, *Deputy Director*

BEST COPY AVAILABLE

Table of contents

	Foreword	6
Chapter 1	Background, objectives and design of the study	9
	1.1. Background	9
	1.2. Objectives of the study	11
	1.3. Design of the study	12
	1.4. Research questions and methodology	13
	1.5. Structure of the synthesis report	15
Chapter 2	European policies related to agriculture and employment	16
	2.1. Key concepts of agriculture	16
	2.1.1. The concept of agriculture	16
	2.1.2. The concept of sustainable agriculture	16
	2.1.3. The concept of organic farming	18
	2.2. European agricultural policy related to organic farming and the environment	19
	2.3. Employment in agriculture and in organic farming	20
	2.4. Social dialogue in the agricultural sector and the role of vocational training	22
	2.5. The role of the social partners	23
	2.6. Structural Funds in the promotion of agricultural training	25
Chapter 3	The European agricultural sector	28
	3.1. Description of the current situation	28
	3.2. The European organic farming sector	31
	3.2.1. Organic farming at European level	31
	3.3. Organic farming and certification system in the studied EU countries	35
	3.3.1. Organic farming in Germany	35
	3.3.2. Organic farming in Greece	38
	3.3.3. Organic farming in Portugal	43
	3.3.4. Organic farming in Spain	47
	3.3.5. Organic farming in the Netherlands	51

Chapter 4 Education, training and innovation transfer 56
4.1. The theoretical framework 56
4.2. Agricultural education and training within EU 58
4.2.1. Agricultural education and training in Germany 58
4.2.2. Agricultural education and training in Greece 59
4.2.3. Agricultural education and training in Portugal 60
4.2.4. Agricultural education and training in Spain 61
4.2.5. Agricultural education and training in the Netherlands 62
4.2.6. Environmental education and vocational training in Germany 63
4.2.7. Environmental education and vocational training in Greece 64
4.2.8. Environmental education and vocational training in Portugal 66
4.2.9. Environmental education and vocational training in Spain 67
4.2.10. Environmental education and vocational training in the Netherlands 68
4.2.11. Summary 70
4.3. Innovation transfer 75
4.3.1. Innovation transfer in Germany 75
4.3.2. Innovation transfer in Greece 77
4.3.3. Innovation transfer in Portugal 78
4.3.4. Innovation transfer in Spain 79
4.3.5. Innovation transfer in the Netherlands 80

Chapter 5 Processing, distribution and consumer information for organic products 82
5.1. Work organisational principles 82
5.1.1. Description of wine production 82
5.1.2. Description of olive oil production 85
5.1.3. Description of fruit juice production 89
5.2. Distribution of organic products 91
5.3. Consumers of organic products 97

Chapter 6 The national case studies 100
6.1. Methodology of primary data collection – analysis & results 100
6.2. Interviews with certified organic farmers 101
6.2.1. The German case 101

6.2.2. The Greek case 104
6.2.3. The Portuguese case 106
6.2.4. The Spanish case 108
6.2.5. The Dutch case 110
6.2.6. Comparative results for organic farmers 114
6.3. Interviews with agronomists inspectors from certification organisations 116
6.3.1. The German case 116
6.3.2. The Greek case 117
6.3.3. The Portuguese case 119
6.3.4. The Spanish case 119
6.3.5. The Dutch case 121
6.3.6. Comparative results of agronomists inspectors 122
6.4. Interviews with extensionists() from the local extension services 124
6.4.1. The German case 124
6.4.2. The Greek case 126
6.4.3. The Portuguese case 128
6.4.4. The Spanish case 130
6.4.5. The Dutch case 131
6.4.6. Comparative results of extensionists 132
6.5. Interviews with key people in innovation transfer and knowledge dissemination 134
6.5.1. Directors of agricultural training centres in Germany 134
6.5.2. Directors of agricultural training centres in Greece 135
6.5.3. Directors of agricultural training centres in Portugal 136
6.5.4. Directors of agricultural training centres in Spain 137
6.5.5. Directors of agricultural training centres in the Netherlands 138
6.5.6. Comparative results from interviews with directors in agricultural training centres 141
6.6. Interviews with teachers from high schools and from technical vocational agricultural schools 143
6.6.1. The German case 143
6.6.2. The Greek case 145
6.6.3. The Portuguese case 146
6.6.4. The Spanish case 149
6.6.5. The Dutch case 150
6.6.6. Comparative results for teachers in high schools 152
6.6.7. Comparative results for teachers technical vocational agricultural schools 154

6.7. Interview with retailers of organic products 156
6.7.1. The German case 156
6.7.2. The Greek case 157
6.7.3. The Portuguese case 158
6.7.4. The Spanish case 160
6.7.5. The Dutch case 161
6.7.6. Comparative results of retailers of organic products 163
6.8. Interview with consumers who buy organic products 166
6.8.1. The German case 166
6.8.2. The Greek case 166
6.8.3. The Portuguese case 167
6.8.4. The Spanish case 170
6.8.5. The Dutch case 171
6.8.6. Comparative results of consumers of organic products 172

Chapter 7 Conclusions and suggestions 174
7.1. Conclusions 174
7.2. Formation of a common policy in education/training and knowledge dissemination 177
7.2.1. Research and knowledge generation 177
7.2.2. Training of human resources, knowledge dissemination and transfer of know-how 178
7.2.3. Education and awareness 179
7.2.4. Vocational agricultural training 179
7.2.5. Distribution of relevant leaflets 180
7.2.6. Promotion of organic products and consumer information 180

Chapter 8 Summary 182
8.1. Background 182
8.2. Objectives of the study 183
8.3. Methodology 184
8.4. Conclusions 185

Chapter 9 Bibliography 187

Foreword

It is widely accepted that European Agriculture has entered a new era. The reform of the Common Agricultural Policy in 1992 and the Agenda 2000 put the emphasis mainly on: i) incorporation of environmental friendly regulations in agricultural policy, ii) effective protection of the environment with the rational use of inputs and natural resources and iii) the labelling of quality in agricultural products and food. In addition, farmers have been given the task of protecting the environment and the healthy diet of consumers by producing safe agricultural products.

In the overall context of developing an environmentally-friendly agricultural model, organic farming constitutes a sustainable form of agriculture, since it promotes socially responsible and economic production methods. Organic farming respects the natural efficiency of plants, animals and the landscape.

According to statistical data, the international market for certified organic products is growing rapidly. Food produced using organic farming methods now accounts for 5% of total food production, and it is estimated that this figure will grow to 10% by 2010.

Therefore, taking into account the importance of the combination 'quality of agricultural products' and 'protection of the environment' for both agriculture and employment within EU, Cedefop has decided to make a contribution in this area by assigning the current study.

The main objective of the study is to examine the existing provisions for environmental education and for environmentally friendly agricultural practices that lead to advanced, high quality, certified and healthier agricultural products. It further aims to define new knowledge, skills and qualifications on environmental issues for everyone involved in the supply chain between the farmer-producer and consumer.

The present report has been drawn up by Prof. A. Papadaki-Klavdianou and her scientific team at the Department of Agricultural Economics, Aristotle University of Thessaloniki, who has also written the Greek national report. Prof. H. Boland from the Institute of Rural Sociology and Extension, School of Agriculture, Justus Liebig University of Giessen, Germany has prepared the German report; Prof. A. Cristovao, Department of Economy and Sociology, University of Tras-os-Montes and Alto Douro, Portugal prepared the Portuguese report; Prof. A. Colom-Gorgues from the Department of Firm Management, and Natural Resources Economic Management, University of

Lleida, Spain prepared the Spanish report, and Dr. J. Warmerdam from The Institute of Applied Social Sciences (ITS), Nijmegen, the Netherlands prepared the Dutch report. Cedefop would like to thank them all, especially Prof. Dr. A. Papadaki-Klavdianou, the scientific coordinator, for their cooperation on this project.

The same goes for the Organisation for Agricultural Professional Education, Training and Employment (*OGEEKA*), which, in cooperation with Cedefop, organised a seminar to inform its agronomy staff about the potential for and prospects of organic farming in Greece, and invited the scientific coordinator, Prof. A. Papadaki-Klavdianou, to present the main findings of the Greek study. During the same event, Cedefop arranged a press conference on agricultural education, information and training and presented the main findings of the study to the media (June 2001).

The findings of the study were also presented at the Greek-Dutch Agricultural Conference (December 2001) (Session on Agricultural Education and Extension), which was organised by the Industrial Union of Northern Greece and the Royal Dutch Embassy.

In conclusion, since this study aims to contribute to the further expansion of the organic farming sector, both the scientific group and we at Cedefop understand the need to conduct the same study in the organic animal breeding sector, so as to fully cover the scientific field of the production and supply of organic products.

Tina Bertzeletou
Project coordinator

Stavros Stavrou
Deputy Director
Responsible for the Research programme

CHAPTER 1

Background, objectives and design of the study

1.1. Background

In 1992 the CAP was reformed in an attempt to:

(a) include environmentally friendlier aspects in agricultural policy;
(b) provide for the environment with the rational use of inputs and natural resources;
(c) enhance agricultural products and quality foods by establishing the rural population as guardians of the environment and of the nutrition.

Within this framework, certain measures were taken aimed at preventing farming from harming the environment and, in particular, natural resources. In addition, special emphasis was laid on the adoption of agricultural production methods - organic farming, integrated pest management - compatible with the requirements of the protection of the environment and the maintenance of the countryside (European Commission, 1997: CAP and The Environment).

For the successful implementation of the new policies, however, top-down approaches such as the imposition of measures, directives and regulations may not be enough, if the human factor is not taken into account. 'Not only the practices shift agriculture to sustainable agriculture, but also farmers themselves and their values; these values incorporate the element of sustainability as an important/significant part of their quality of life' (Siardos, 1993). Education and training constitutes the most important procedure for the development of new attitudes and values. Moreover, training can contribute to the development of environmental awareness of the rural population and, especially, future farmers.

Environmental education/consciousness is not just an additional scientific field. It is a new philosophy of education and training which aims at the development of environmental awareness, in combination with the development and evolution of the individual. The particular characteristics of environmental education require new strategies if they are to be incorporated in the typical educational process; these characteristics should not be limited to the diffusion of environmental terms and contents in natural and social

sciences. It is obvious that the above affects teaching methods, the organisation of schools and bodies related to knowledge diffusion and lifelong learning in the rural population, and also the education and training of all the involved groups or bodies.

By shaping the landscape through their everyday activities, rural populations and, in particular, farmers play a crucial role in environmental conservation. Furthermore, consumers seem to be more aware of the health risks that can arise from the consumption of food with agrochemical residues. Consequently, their knowledge, attitudes and behaviour towards the environment can strongly influence the attempts made to shift towards more sustainable practices and directions.

Taking into account the new challenges in the agricultural sector - such as the future extension of the European Union, CAP reform, evolution at international level, innovations and new technology, the agricultural trade balance - the cultivation and production of environmentally friendly products, such as certified organic products, could improve the competitiveness of the European agriculture in the international market. In addition, the development and further expansion of land cultivated with organic products could improve the integrated development of the countryside and the protection of the environment. Simultaneously, consumer preferences for healthy products, free of agrochemicals, force farmers to produce organic products.

With these aspects in mind, the European Union has introduced regulations and structures for the control and certification of agricultural products produced by organic methods (EU Regulations 2092/91, 2078/92). Therefore, it is critical to identify the level of information and awareness, as well as the training needs, of all the people and institutions that are involved in this supply chain: farmers, inspectors, agronomists, extensionists, teachers, retailers and finally consumers. This is the basis for the proposal of the present study, which took place in five European countries: Germany, Greece, Portugal, Spain and the Netherlands.

1.2. Objectives of the study

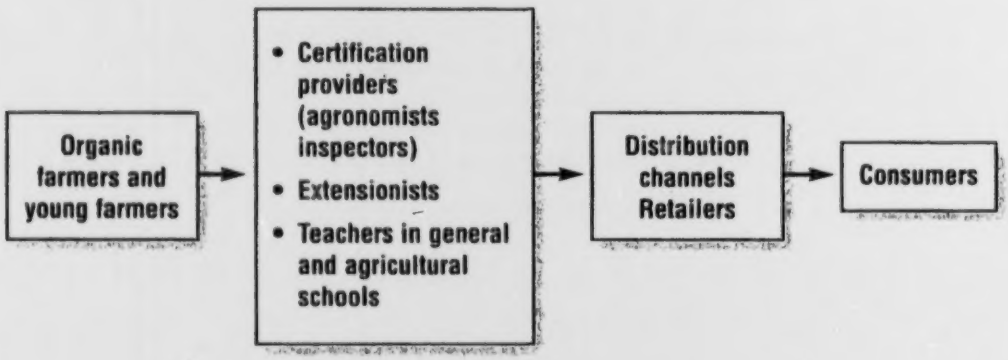
The main objective of the study is to examine the existing structures of environmental education and of agricultural practices friendly to the environment. It further aims to define new knowledge, skills and qualifications about environmental issues in the production process of alternative agricultural products without agrochemicals (organic farming) and ways they can best be acquired.

More precisely, the objectives of the study could be summarised as aiming to:

(a) examine existing structures/possibilities for environmental education/ training in general and agricultural schools;
(b) examine existing structures for knowledge dissemination and information related to the protection of the environment and learning of organic production methods (according to EU Regulation 2092/91);
(c) examine the existing skills and training needs of farmers with farms certified as producing organic products in recent years;
(d) examine the existing skills, activities and training needs of:
    (i) agronomist inspectors from the certification institutes;
    (ii) teachers of environmental education in agricultural and other high schools;
    (iii) agronomists/extensionists;
    (iv) retailers;
    (v) consumers who prefer organic products and their level of information and knowledge regarding hygiene and organically produced products;
(e) describe the national system and the institutes responsible for the certification of organically produced products
(f) establish, at European level, skills in education/training and knowledge dissemination in the organic farming sector.

The study is not limited to one sector of organic farming or products, but involves several. Each applies to the organic farming complex: production, processing, education, training, distribution and retail. The project focuses, therefore, on the supply chain of organically produced products through the existing structures of knowledge, information and skill acquisition. In each of the participating countries, two product chains have been chosen, within which the relationship between environmental education and agricultural and business practices friendly to the environment has been studied. The model that has been used within each study is presented in the following figure.

Figure 1.2. **Human resources involved in the supply chain of organically produced products and in environmental education and training**



1.3. Design of the study

The partnership of the researchers in five countries consisted of:

(a) the Institute of Rural Sociology and Extension, School of Agriculture, Justus Liebig University of Giessen, Germany;
(b) the Department of Agricultural Economics, School of Agriculture, Aristotle University of Thessaloniki, Greece;
(c) the Department of Economy and Sociology, University of Tras-os-Montes and Alto Douro, Portugal;
(d) the Department of Firm Management, and Natural Resources Economic Management, University of Lleida, Spain
(e) ITS Nijmegen, the Netherlands.

The project was coordinated by Mrs Tina Bertzeletou of Cedefop.

During the first meeting of the project team in Brussels, it was decided that wine would be a common product under study for all the participant countries. In addition, another organic product of great importance for each country was included. The criteria for the selection of the second organic product would be: the importance of the product for the national or regional economy; the number of people employed and involved in the supply chain of the product; and the level of knowledge development on environmental friendlier practices. Therefore, the following product choices were made:

(a) in Germany, organic wine and potato production were studied; wine was chosen as an important product, especially in southern countries,

BEST COPY AVAILABLE

although it is also widely produced in Germany and in the Netherlands to a lesser extent; organic potato cultivation plays an important role for the regional economy of Hessen, which was the survey area in Germany;

(b) in Greece and in Portugal, organic wine and olive oil were the products under survey; both of them are widespread and form the majority of organically produced products in Greece; in Portugal organic olive oil has undergone greatest growth in production;

(c) in Spain, the products to be studied were organic wine and organic vegetables;

(d) in the Netherlands, the case study included the products organic wine and fruit juices; both of these products are relatively small subsectors within Dutch organic farming, in terms of number of companies, acres and yields, but both products are operating in an expanding market and have good prospects for future development.

At this point it is critical to discuss difficulties encountered in conducting the current study. The collection of secondary data from the Ministry of Agriculture and its divisions in Greece was complicated, as statistical data were not completed and available because organic farming is a new dimension in the agricultural sector. The European sources of statistical data regarding organic farming were also scant. In some countries, especially in the Netherlands, interviewing was difficult since people were not willing to participate without a reward.

1.4. Research questions and methodology

With these product chains, the research questions guiding the national studies were formulated in the following way:

1. What is the current situation of the organic farming sector within the EU?
2. What are the existing structures for knowledge, dissemination and information related to the protection of the environment and learning of organic production methods?
3. What is the level of knowledge and the training needs of farmers with certified farms producing organic products in recent years?
4. What is the role of the national and private institutes responsible for the certification of organically produced products?
5. What is the level of development of environmental education and training in high and technical vocational agricultural schools?
6. What problems exist within the distribution of organic products in the market and what are the perspectives for further expansion?

7. What is the level of information and knowledge among consumers of organically produced products?
8. Is there any possibility of a common policy in education/training dealing with organic farming and the development of environmental consciousness at an EU dimension?

The first step in the design of the study was to collect secondary and statistical data from all the relevant available sources (Ministry of Agriculture, Ministry of Education, National Statistical Service, Eurostat, EU Regulations, inspection and certification organisations of organic products, relevant literature).

The second step was to decide on the specific area in each country where the case study would be based. The selection of the area was based upon the potential for organic farming and the supply chain of organic products in the area.

The third step was the selection of the product to be studied. A common organically produced product was selected for all the five participating countries. Organic wine was found to be the most appropriate for the purposes of comparability in the structures and systems of certification. For the second product, organically produced olive oil was selected from Greece and Portugal, organic potatoes from Germany, organic vegetables from Spain and organic fruit juice from the Netherlands.

The fourth step was the design of the methodology and tools that would be used for the analysis. In order to meet the objectives of the study, specific questionnaires were designed for each category of people involved in the chain - organic farmers, certification institutes, inspectors, consultants, teachers, retailers, and consumers.

The work team in each country described itemised the supply chain of organically produced products, covering all the interactions within this chain. Finally, personal interviews took place. The questionnaires had the aim of examining environmental consciousness, attitudes and behaviour through the education and training, knowledge dissemination, information and new skills.

1.5. Structure of the synthesis report

This synthesis report is structured in the following way.

In Chapter 2, the European policy on agriculture and employment are presented, taking into account new trends and dimensions. Additionally, key concepts and terminology relating to conventional agriculture and its alternatives are given. The description of the European agricultural sector, with emphasis on the five participating countries, is presented in Chapter 3. Additionally, a brief presentation of the organic farming sector within each country is provided, including the institutional framework developed in each case.

Chapter 4 describes the education and vocational training systems within the five countries, and the development of environmental education structures, providing information for each institute that offers either higher professional education or training in specific areas of environmental agriculture. In addition, Chapter 4 presents the transfer of knowledge, information and innovation regarding environmental practices within the five countries. In Chapter 5 the processing and distribution process are described, and the types of information and knowledge dissemination among consumers of organically produced products are presented. Chapter 6 provides the case studies for all the countries involved in the project. More precisely, a brief description of the area where the primary data collection took place is presented. The main results obtained from the analysis of the questionnaires are given in the following sections of the chapter. In Chapter 7 the main conclusions of the project are provided, as well as suggestions for the development of a common policy in education within the chain of organically produced products. Finally, Chapter 8 provides a summary of the main results.

CHAPTER 2

European policies related to agriculture and employment

2.1. Key concepts of agriculture

2.1.1. The concept of agriculture

Although humans have cultivated land for thousands of years, methods and technologies used before the 20th century remained the same and productivity was low. The end of World War II coincided with the massive use of agrochemicals (pesticides and insecticides), improved varieties of plants and animals, modern machineries and irrigation systems. Therefore, an improvement in the yields of cultivated plants and breeded animals came about, in combination with a marked increase in the production of agricultural products. This phenomenon was named the 'green revolution'. However, it was estimated that in order for the quantities produced to be doubled, the quantities of agrochemicals required should be decupled.

This specific cultivation technique has been characterised as conventional and this form of agriculture as conventional agriculture. In contrast to the conventional, other forms of agriculture have been considered, aimed at the reduction of agrochemical use during the cultivation process, in order to protect the environment and to promote viable agricultural development (Tsoutsoulopoulos, 1999).

2.1.2. The concept of sustainable agriculture

Agriculture has changed dramatically, especially since the end of World War II. Food and fibre productivity soared due to new technologies, mechanisation, increased chemical use, specialisation and government policies that favoured maximising production. These changes allowed fewer farmers with reduced labour demands to produce the majority of the food and fibre in the U.S.

Although these changes have had many positive effects and reduced many risks in farming, there have also been significant costs. Prominent among these are topsoil depletion, groundwater contamination, the decline of family farms, continued neglect of the living and working conditions for farm labourers, increasing costs of production, and the disintegration of economic and social conditions in rural communities.

'A growing movement has emerged during the past two decades to question the role of the agricultural establishment in promoting practices that contribute to these social problems. Today this movement for sustainable agriculture has increasing support and acceptance within mainstream agriculture. Not only does sustainable agriculture address many environmental and social concerns, but it offers innovative and economically viable opportunities for growers, labourers, consumers, policymakers and many others in the entire food system' (Legg, 1998; Michelsen *et al*, 1999).

Sustainable agriculture integrates three main goals: environmental health; economic profitability; and social and economic equity. A variety of philosophies, policies and practices have contributed to these goals. People in many different capacities, from farmers to consumers, have shared this vision and contributed to it. Despite the diversity of people and perspectives, the following themes commonly weave through definitions of sustainable agriculture' (Legg, 1998).

Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship of human resources includes consideration of social responsibilities such as the working and living conditions of labourers, the needs of rural communities, and consumer health and safety both in the present and the future. Stewardship of land and natural resources involves maintaining or enhancing this vital resource base for the long term.

A systems perspective is essential to understanding sustainability. The system is envisioned in its broadest sense, from the individual farm, to the local ecosystem, and to communities affected by this farming system both locally and globally. An emphasis on the system allows a larger and more thorough view of the consequences of farming practices on both human communities and the environment. A systems approach gives us the tools to explore the interconnections between farming and other aspects of our environment.

A systems approach also implies interdisciplinary efforts in research and education. This requires not only the input of researchers from various disciplines, but also farmers, farm workers, consumers, policymakers and others.

Making the transition to sustainable agriculture is a process. For farmers, the transition to sustainable agriculture normally requires a series of small, realistic steps. Family economics and personal goals influence how fast or how far participants can go in the transition. It is important to realise that each

BEST COPY AVAILABLE

small decision can make a difference and contribute to advancing the entire system further on the 'sustainable agriculture continuum'. The key to moving forward is the will to take the next step.

Finally, it is important to point out that reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, labourers, policymakers, researchers, retailers and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

2.1.3. The concept of organic farming

Organic farming is one form within the overall framework of sustainable agriculture. Its main approach is to manage a mixed farm, as much as possible, within a closed system. Since site-conditions are individual properties by definition, a farm can be conceived as an individual entity. The main principle of organic farming is to be bio-intensive instead of chemio-intensive. It promotes environmentally, socially and economically sound production of food and fibres. By respecting the natural capacity of plants, animals and the landscape, it aims to optimise quality in all aspects of agriculture and the environment. Organic farming dramatically reduces external inputs by refraining from the use of chemical plant protection products. Instead, it allows nature to increase both yields and disease resistance. Organic farming adheres to globally accepted principles, which are implemented within local social-economic, geo-climatic and cultural settings [FAO/IFOAM (1) meeting on organic agriculture, 1998].

The main advantages of organic farming are generally seen as:

(a) market prices for such products are higher;
(b) the way in which they are produced involves less intensive use of land;
(c) the attainment of a better balance between supply of, and demand for, agriculture products;
(d) better protection of the environment.

Another advantage is that organic farms are, in general, more labour intensive than conventional farms, and, therefore, should contribute to rural employment and help keep in business small farms which would otherwise not be able to cope with intensification and global competition.

An alternative aspect of organic farming is biodynamic agriculture, differentiated from organic farming in its ideological point of departure. More precisely, biodynamic agriculture also puts high value on environmental

(1) FAO: Food and Agriculture Organisation, IFOAM: International Federation of Organic Agriculture Movements

BEST COPY AVAILABLE

protection and animal well-being, but it does this from a specific point of view, which is inspired by the anthroposofical movement. For this type of agriculture, the concept of 'holism' is essential. Parts of the farm and the farm as a whole are seen as a complex 'living system', connected with other systems and with the earth as a whole as the overarching living system. Biodynamic farmers apply specific methods to bring (life) cycles on the farm into correspondence with the (life) cycles in its environment.

These two types are extreme types. In actual practice, individual farmers might apply methods which belong to different traditions. However, viewed from an institutional perspective, the distinction bears some importance.

2.2. European agricultural policy related to organic farming and the environment

European agriculture is at the beginning of a new era. The integration of the dimensions of agriculture in the framework of Agenda 2000, from the Council of Ministers of Agriculture, and the accreditation from the Berlin summit, sets the parameters of European agricultural policy for the next six-year period (2000-2006). European agriculture within this period is called to integrate the infrastructures for:

(a) the development of agriculture;
(b) the reconstruction of rural areas;
(c) the competitiveness of European agriculture within the international competitive environment;
(d) the shift towards quality, traditional and organic agricultural products;
(e) alternative forms of employment (multiactivities);
(f) the management of water resources, forests, fishery, the environment.

These parameters are resets on major agricultural policies of the EU, affecting all EU members within the future. Consequently, the reform of the Common Agricultural Policy (CAP), has significant political interest and requires the development of a new structural and organisational frame in order to promote and enhance the integrated development of rural areas. The CAP was reformed in 1992 in an attempt to:

(a) include environmentally friendlier aspects in agricultural policy;
(b) provide for the environment with the rational use of inputs and natural resources;
(c) enhance agricultural products and quality foods by establishing the rural population as guardians of the environment and of the nutrition.

Within this framework, it is critical to present in this section the EU regulatory and legal arrangements for organic farming:

- Regulations 2092/91 and 1804/99 concern the production methods of organic farming and livestock respectively. The contributions of these regulations are critical as they are primarily market–oriented, offer technical and background tools to the operators and norms for both production and commerce, also including imports and exports of organic products. Their objectives are to promote quality and food security and therefore to promote sustainability.
- Regulation 2078/92, which was replaced by regulation 1257/99, concerns agricultural environmental protection and rural development. The regulation offers implementation as well as the financial assistance to the operators. Its objective, from the environmental point of view, is the protection of rural and natural resources and the environment, and simultaneously it promotes quality of production and food security. As far as organic farming is concerned, the beneficiaries of the assistance have to respect the norms, methods and certification procedures of regulations 2092/91 and 1804/99.

2.3. Employment in agriculture and in organic farming

Since 1997 unemployment in Europe has been on the retreat. Despite this improvement, job creation remains one of the Union's key objectives. A high level of employment is a prerequisite for social justice and social cohesion. According to Eurostat, average unemployment in the European Union was 9 % in January 2000. An estimated 15.5 million persons were unemployed, as opposed to almost 18 million in 1997.

The improvement in the job situation in Europe is partly due to faster growth since 1997. This was 2.5 % in 1997, in contrast with 1.8 % in 1996. A higher figure in 1998 (2.6 %) confirmed the trend though there was a slowdown in 1999 (2.1 %). The improvement in employment is also partly the result of the various actions taken in the framework of the European employment strategy.

When the Commission presented its strategic objectives for the period 2000-2005 on 9 February 2000, it emphasised its objective of full employment in order to bring the European unemployment rate closer to that of the best performing countries. In this communication [COM(2000) 154 final], the Commission points out that, as unemployment is the main cause of poverty

and social exclusion, it is an unacceptable burden on European society.

In spite of the comparative success of the European strategy developed since 1997, employment remains a major issue in the Union. Since the Lisbon Special European Council of the 23 and 24 March 2000, where the situation regarding growth, competitiveness and employment within the European Union was studied, it has become the priority to make the European Union the most competitive zone in the world and to reach full employment by 2010.

The EU agricultural sector lost the equivalent of a further 115 000 full-time workers in 1998, a fall representing -1.7 % for EU-15 and -1.5 % for the Eurozone. Declines were recorded in 13 Member States, ranging from -1.5 % in Italy and Luxembourg to -4.1 % in Germany. Countries with rises were the Netherlands (1.3 %) and Spain (1.2 %). (Eurostat, Statistical Office of the European Communities in Luxembourg, 2000).

As a result, the share of agricultural employment in total EU employment will 'almost certainly have fallen' from the 4.6 % of 1997 (Eurostat, 2000). Despite the continuing fall in labour, output rose by an estimated 1.5 % in volume, reflecting further labour productivity gains.

Eurostat emphasises that the 1998 fall encompasses an equivalent loss of some 130 000 family workers but a small rise in non-family labour volume. This 'seems to confirm a slow underlying structural shift towards hired labour'. The number of full-time job equivalents in EU-15 agriculture fell from 12.4 to 6.7 million between 1979 and 1998.

The only data on the organic farming sector is that collected in the study in the five participating countries. The labour supply in organic farms is provided almost exclusively by the farmer and his family members. This is the situation mainly in Greece and Spain. In the other three countries, the labour force needs for organic farming are also at a minimum, taking into account that the area cultivated organically represents just a small part of large farms.

Employment in the sector of organic farming cannot be focused just on the production and cultivation processes. The whole supply chain of organic products requires skilled employees. In the following paragraphs, the effect of the expansion of ecological management on employment is discussed.

In many cases, new processing and marketing forms are established with the introduction of ecological production methods. This is essential to separation of product qualities and for an adequately differentiated communication with consumers. The rearrangement of agricultural production to organic production methods raises work levels only slightly, though more manual work is necessary in some areas. In general such rearrangement does not lead to the employment of additional permanent

workers. However, new processing and marketing facilities are created, including new marketing structures for products which do not need considerable effort in terms of processing (e.g. fruit or fresh vegetables). These arise as farm shops, which leads to further employment of family members or of new workers. New jobs also emerge in trade and marketing in enterprises, service or stores. The existence of a board of inspection for the certification process of organic production serves to safeguard standards. Therefore, a continuous gathering and assessment of business data is carried out. The boards of inspection bear the responsibility.

Consultation with organic farms aims to develop a sustainable organisation for the enterprise. In addition to the manufacturing data, the personal abilities and strengths of the family members have significant influence. The starting point for every extension process is a sound situation analysis.

Here lies the potential to link control and advice; the data gathered under the control process are an important basis for extension work. Therefore a double-sided flow of information should be ensured. However, the roles of adviser and inspector must remain separate.

Inspection functions are always based on past behaviour and compliance with regulations. In contrast extension work is future-oriented and does not lead to a guaranteed result. Nevertheless, the two roles complement each other very well. Control is responsible for assessment of the present situation and underlying behaviour, while the task of extension is to draw conclusions, to design new action strategies and to support the family with translation into action.

2.4. Social dialogue in the agricultural sector and the role of vocational training

The sectoral dialogue committee 'Agriculture' was established in 1999 and plays a leading role in vocational training. The committee has the responsibility for establishing working groups for projects. The work programme for 2000 focused on the following activities:

- employment
- health and safety
- certification
- working methods
- framework agreement
- project development
- others.

The White Paper of the social partners on vocational training is one of the results of the new committee's first work programme. GEOPA/COPA([2]) and EFA([3]) adopted innovative, project-oriented work organisation in the committee and focused their activities on the project ARE([4]). This project was composed of three main elements: a series of six seminars in the Member States, the White Paper from the social partners and a final conference. In the year 2000 the sectoral dialogue committee focused its activities on the following issues:

(a) structural/technological change in agriculture;
(b) discussions about the 'European model of agriculture';
(c) change of needs regarding the employability and adaptability of workers – demand for new skills and training methods;
(d) globalisation and enlargement of the EU;
(e) new priorities in the labour market and social policy.

2.5. The role of the social partners

The fundamental role of the social partners has been enshrined in the social agreement and the provisions contained in this agreement have been fully embodied in the Treaty of Amsterdam. The Commission facilitates dialogue between the social partners and consults them on the content of proposals in the social field before presenting them. The social partners are involved throughout the legislative process, and this allows them to play a substantial role both in drafting and in implementing new measures. Social dialogue occurs via the three main organisations representing the social partners at European level:

(a) the European Trade Union Confederation (ETUC);
(b) the Union of Industries of the European Community (UNICE);
(c) the European Centre for Public Enterprise (CEEP).

In three agreements, these leading European employers' organisations and trade unions reached negotiated settlements on parental leave, part-time work and fixed-term employment contracts. However, in the agricultural sector, social partner organisations regard the past processes of negotiation as insufficient from the sectoral point of view, for while the ETUC represents the agricultural sector, UNICE does not. The Joint Committee on Social Problems of

([2]) GEOPA/COPA: Employers' Group of Professional Agricultural Organisations in the EU.
([3]) EFA: European Federation of Agricultural Workers' Unions.
([4]) Project ARE: project for Agriculture – Region - Employment.

Agricultural Workers, GEOPA/COPA and EFA only play the role of observers.

The social partners in the agricultural sector are now preparing to be engaged in such activities. In 1997, GEOPA/COPA and EFA signed a framework agreement on the improvement of paid employment in agriculture. In 1999, the Communication from the Commission adapting and promoting the social dialogue at EU level, established the new sectoral dialogue committee 'Agriculture'. In the same year, 384 people participated in activities within the ARE (Agriculture – Region – Employment) project ([5]).

The Commission's job is, therefore, to take all necessary steps to encourage and facilitate consultation with the social partners on the future development of Community action and on the content of any proposals on the European Union's social policy, which is essentially concerned with the labour market (Europa, 2000).

The European centre for promotion and training in the agricultural sector (Cepfar) operates as a 'platform' for the exchange of thoughts and opinions and for informal meetings in order to fulfil its aims:

(a) professional training and professional progress;
(b) social and cultural development of rural areas;
(c) development of structures for information, advisory support, and guidance of employees in the agricultural sector;
(d) expansion of the European concept among employees in agriculture, etc.

For the smooth running of Cepfar, the participation of the following bodies, social partners, and councils is critical:

(a) the Group of Professional Agricultural Organisations (COPA)
(b) the Common Group of Agricultural Cooperative Movement of EU (COGECA)
(c) the European Federation of Agricultural Workers' Unions (EFA)
(d) the European Council of Professional Unions of Agricultural Youth of the EU (CEJA)
(e) the Group of Agricultural Women of COPA
(f) the bodies of the European Commission: Parliament, Social and Economic Council, and
(g) Cedefop.

([5]) The ARE project is a joint programme sponsored by the social partners in the field of agriculture, GEOPA/COPA and EFA. The primary objective of the project is the presentation and assessment of innovative approaches in individual countries. In addition, the project encompasses the preparation of an overview of the different education/training systems in the EU agriculture and forestry sector, and the evaluation of possibilities for multilateral certification. The project was realised in seminars held in six countries (Germany, Denmark, Italy, France, UK and Spain). Introductory presentations, discussions and interviews revealed the presence of problems in the green sector that were common to all participating countries.

BEST COPY AVAILABLE

The European Centre for Agricultural Studies and Training (CEEFA) is an international, non-profit association, with a long-standing tradition. Its purposes are to promote:

(a) the agricultural employment situation, in terms of quantity and quality;
(b) integrated and sustainable rural development that respects the environment;
(c) the quality of agricultural products and produce.

It covers the countries of the European Union, the overseas territories belonging to the Union, the countries of central and eastern Europe, and the non-European countries of the Mediterranean.

CEEFA´s resources consist of members' contributions and subsidies and grants awarded to it so that it may achieve the goals it has set for itself. The prospect of EU enlargement brought with it new duties for CEEFA. Over the last five years CEEFA has supported the integration of Central and Eastern European (CEE) countries. In 1997, EFA, whose plans and experience serve as clear guidelines for CEEFA's activities, adopted a future draft document entitled 'Prospects for 2005', focusing on new key issues. Ever since, CEEFA's seminar and research work has focused on the concept of sustainable agriculture. A series of 16 seminars on the new CAP will look at the key issues covered in 'Prospects 2005'. Additionally, CEEFA will be running research projects on ergonomics and holding a series of seminars on the use of new media in agriculture along with events falling within the scope of the EU's PHARE Democracy programme.

All the above mentioned institutes with proposals and activities contribute significantly to the development of rural areas and to EU agriculture.

1.8. Structural Funds in the promotion of agricultural training

The Structural Funds and the Cohesion Fund are part of the Community's structural policy, which is intended to reduce the gap in terms of development between different regions and between Member States of the European Union and thereby promote economic and social cohesion. Between 1994 and 1999, the Community budget allocated to structural measures was EUR 208 billion, i.e. roughly 35 % of the EU's total budget. 90 % of this amount was for the regions and 10 % for the four 'cohesion countries'. The financial allocation has risen to EUR 213 billion (including EUR 195 billion for the Structural Funds and EUR 18 billion for the Cohesion Fund) for the period 2000-2006 (Europa, 2000).

The European Union has four financial instruments for the regions:

(a) the European Social Fund (ESF), the creation of which was provided for by the Treaty of Rome;

(b) the European Agricultural Guidance and Guarantee Fund (EAGGF), Guidance Section, set up in 1962 (the division between the Guarantee and Guidance Sections dates from 1964);

(c) the European Regional Development Fund (ERDF), set up in 1975;

(d) the Financial Instrument for Fisheries Guidance (FIFG), created in 1993.

From 1994 to 1999, Structural Fund assistance was provided, subject to the principles of concentration, partnership, additionality and planning, for seven objectives and thirteen initiatives.

In order to improve the effectiveness of Community action during the period 2000-06, the Commission communication 'Agenda 2000', published in July 1997, proposed that the structural policy be reformed. This reform increased the concentration of aid and simplified its operation by reducing the number of objectives to three:

(a) development and structural adjustment of the regions whose development is lagging behind and whose per capita GNP is less than 75 % of the European Union average (Objective 1: it receives 70 % of the Structural Funds);

(b) the economic and social conversion of areas with structural difficulties (Objective 2: this covers areas with economic diversification problems, i.e. areas undergoing economic change, rural areas in decline, areas in crisis dependent on fishing and urban areas in difficulty);

(c) the development of human resources outside the regions eligible for Objective 1 (Objective 3: this is the reference framework for all the measures taken under the new title on employment in the Amsterdam Treaty and the European employment strategy).

Community initiatives have been reduced to:

(a) 'Interreg', whose objective is to stimulate cross-border, transnational and inter-regional cooperation;
(b) 'Leader', which aims to encourage rural development through initiatives by local action groups;
(c) 'Equal', which provides for the development of new practices to fight against discrimination and inequalities of every kind in access to the labour market;
(d) 'Urban', which encourages economic and social revitalisation of cities and suburbs in crisis;
(e) EU Regulations 2092/91, 2078/92, 950/97, etc.

Economic and monetary union has also highlighted the existence of serious economic and social disparities between the Member States of the European Union. A cohesion fund was set up in 1993 to strengthen the structural policy. This is intended for those countries with a per capita GNP of less than 90 % of the Community average, i.e. Greece, Spain, Ireland and Portugal. The aim of the cohesion fund is to grant funds for environment and transport infrastructure projects.

CHAPTER 3

The European agricultural sector

3.1. Description of the current situation

The study of training, knowledge dissemination and certification of the quality of organically produced products is based on an approach, which covers all the bodies that are involved in the process and the supply chain of these products. In order to be more informative, the study should refer to the agricultural sector as a whole as well as to the organic farming sector and the level of development within each participating country. Therefore, a brief presentation of the main agricultural indices in each country and across the EU is provided in this section. The main indices of organic farming sector are presented in the following section of the present chapter.

Analysing the data on the size of agricultural holdings in the various countries of the European Union, we can distinguish four groups of countries:

(a) countries with a highly concentrated agricultural sector; this accounts for only one country, the United Kingdom, with an average holding size of 69.3 hectares in 1997;
(b) countries with a concentrated agricultural sector: France, Luxembourg, Denmark, Germany, and Ireland;
(c) countries with a low concentration: Spain, Belgium, and Holland;
(d) countries with an agricultural sector of predominantly small farm units: Portugal, Greece, and Italy.

The countries where the study was performed belong to the last three groups.

During the 1990s there has been a reduction in utilised agricultural area in most of the EU countries, the exceptions being Luxembourg, Germany and Belgium. This tendency was especially strong in Greece, Ireland (21.89 % surface reduction) and Italy (7.44 % reduction).

This trend has gone hand-in-hand with the disappearance of a large number of holdings, which resulted in a process of concentration, with the size of the holdings increasing by 12.9 %, from about 16.02 hectares to 18.4 hectares in the EU-15. This is a process that has taken place in most of the countries of the Member States, for the exceptions being Greece, Ireland and the UK, where the average size of the holdings has reduced.

Table 3.1. **Utilised agricultural area and size of agricultural holdings in the EU-15 (1990-98)**

Country	Utilised agricultural area (1000 hectares)			No. of holdings (x 1000)			Average UAA per holding		
Data for	1991	1995	1998	1989-90	1993	1997	1991/ 1990	1995/ 1993	1997
UK	18 400	15 852	16 169	243.1	243.5	233	75.69	65.1	69.3
France	30 500	30 056	28 331	923.6	801.3	680	33.02	37.5	41.7
Luxemburg	126	127	127	3.95	3.4	3	31.90	37.4	42.5
Denmark	2 781	2 715	2 689	8.3	73.8	63	34.21	36.8	42.6
Germany	**16 910**	**17 344**	**17 160**	**653.6**	**606.1**	**534**	**25.87**	**28.6**	**32.1**
Ireland	5 697	4 450	4 342	170.6	159.4	148	33.40	27.9	29.4
Spain	**27 110**	**25 093**	**25 630**	**1 593.6**	**1 383.9**	**1 208**	**17.01**	**18.1**	**21.2**
Belgium	1 395	1 366	1 383	85.0	76.3	67	16.41	17.9	20.6
Netherlands	**2 019**	**1 981**	**2 011**	**124.8**	**119.7**	**108**	**16.18**	**16.5**	**18.6**
Portugal	**4 532**	**39 81**	**3 822**	**598.7**	**489.0**	**417**	**7.57**	**8.1**	**9.2**
Greece	**5 741**	**5 785**	**3 499**	**923.5**	**819.2**	**821**	**6.22**	**7.1**	**4.3**
Italy	17 340	16 800	14 833	2 664.6	2 488.4	2 315	6.51	6.8	6.4
Austria	–	–	3 415	–	–	210	–	–	16.3
Finland	–	–	2 172	–	–	91	–	–	23.7
Sweden	–	–	3 109	–	–	90	–	–	34.7
EU-15	**128 075**	**125 550**	**128 692**	**7 992.9**	**7 264.0**	**6 988**	**16.02**	**17.3**	**18.4**

Source: European Commission (Eurostat and Directorate-General for Agriculture), FAO and UNSO

Employment data also reflect the tendency towards the concentration in the agrarian sector (see table 2). In 1994, the rate of agrarian employment of the EU-15 was 5.5 % of total employment, but in the following years this rate decreased to 4.7 %. Among the five countries selected for this study, Germany and the Netherlands have a very low level of agrarian employment, though these are near the EU average. Meanwhile, in Greece, Portugal and, to a lesser extent, in Spain the ratio of agrarian employment is very high and above the EU average.

BEST COPY AVAILABLE

Table 3.2. **Agrarian civil employment (in % of the total employment)**

Country	Agriculture		
	1994	**1996**	**1998**
EU-15	5.5	4.9	4.7
Germany	3.2	2.9	2.8
Greece	22.3	18.4	17.7
Portugal	11.2	10.7	9.2
Spain	11.8	9.9	7.9
The Netherlands	4.4	4.2	3.5

Source: European Commission (Eurostat and Directorate-General for Agriculture), FAO and UNSO.

In the period from 1994 to 1998 the contribution of the agrarian sector to the Gross Domestic Product (GDP) of the EU decreased from 2.4 % to 1.5 %. We can observe, with respect to the contribution of the five countries to their national GDP, a similar tendency regarding employment. In Spain, Portugal and especially Greece, the agrarian sector is still of significance; in Germany and the Netherlands this sector is of little importance (Eurostat, 1999).

Table 3.3. **Agrarian GDP (in % of the total GDP)**

Country	Agriculture		
	1994	**1996**	**1998**
EU-15	2.40	1.60	1.50
Germany	1.28	1.31	1.23
Greece	10.00	9.00	8.00
Portugal			1.90
Spain			1.80
The Netherlands			2.50

Source: European Commission (Eurostat and Directorate-General for Agriculture), FAO and UNSO

In the bulk of EU countries, agricultural production is much greater than forestry production. However, the new members are an exception to this rule. In Finland, forestry is as important as agriculture. Moreover, it represents more than one third in Sweden and a quarter in Austria.

BEST COPY AVAILABLE

Imports of foodstuffs, live animals, beverages and tobacco in the EU represent almost 8 % of total imports. Since 1990, farm and forestry products and fish rose by an average of 4.4 % per annum. Germany, France, the Netherlands and the UK account for 58 % of this trade, whereas Denmark, Greece and the Netherlands carry out much of their trade with non-EU countries.

The 3.2 million km² territory of the EU includes 43 % farmland, 38 % forest and woodland, 16 % other forms of land and 4 % inland waters. The proportion of these four main categories varies between countries. The UK, Denmark, Ireland, Spain, Italy and France have more than half their land area dedicated to farming. Forest covers almost two-thirds of Finland and Sweden, and half of Greece and Austria. Inland waters cover a significant area in Finland, Sweden and the Netherlands (Eurostat, 1999).

One EU farmer out of every four works on a full-time basis. Most farmers are full-time in Belgium, Luxembourg, the Netherlands and Ireland. In contrast, full-time farmers are a minority in Greece, Spain and Italy, where land areas are usually small and farmers relatively elderly. More than half of them devote less than a quarter of their time to their farm (Eurostat, 1999).

3.2. The European organic farming sector

3.2.1. **Organic farming at European level**

Since the 1992 reform of the CAP, the number of organic farms has rapidly increased in all the Member States. In total, just under 2 % of all agricultural area is devoted to organic farming, on more than 1% of all agriculture holdings (Lampkin, N. *et al*, 1998; Michelsen, J. *et al*, 1999). In general, organic farms are larger than average; however, the situation varies considerably from one country to another. Production of grass as fodder is by far the most important use of organic land, though horticulture is important in Southern Europe.

3.2.1.1. *Number of organic farms*

Overall, organic farming in the EU is still very much a minority activity: according to the farm structure survey (organic-Europe network) it was only in 1995 that the number of organic farms exceeded 1 % of all farms, reaching 1.3 % in 1997. But organic farms are significantly more common in Sweden (12 % of all farms), Austria (9 %) and Finland (4 %). However the situation is changing rapidly. From some 6 300 in 1985, the number of organic and in-conversion farms in the EU is estimated to have exceeded 100 000 in 1998,

an average annual growth rate of around 26 %, with the greatest increases occurring since 1993. But here also, the situation varies from one country to another.

For Member States, - Greece, Spain, Italy, Austria, Finland and Sweden - the average annual growth rate has been 50 % or more over the last ten years. These six countries represent nearly 70 % of all organic farms in the European Community, although they account for only two thirds of all agricultural holdings. In these countries, most of the increase has been since 1993. For Greece and Italy the 1992 CAP reform had an important influence, but Austria, Finland and Sweden were already well advanced before joining the EU.

3.2.1.2. *Area devoted to organic farming*

The number of farms alone does not give a clear picture of progress towards the Council objective of less intensive use of land. For this it is necessary to look at the area under organic farming or in the process of converting to organic farming.

The area devoted to organic farming varies from one country to another. Italy alone has 27 % of the EU's organic land, followed by Germany 16 %, Austria 12 % and Sweden 9 %. These four countries alone account for 64 % of the total organic area, but only 30 % of total agricultural area. At the EU level, organic farms have a larger area than average, based on 1998 estimates. This is particularly the case for Portugal, where organic farms are five times the size of an average farm, Italy (three times the size) and United Kingdom (double the size). In Spain, the average area of organic farms more than doubled between 1995 and 1996, but decreased between 1997 and 1998. However, as part of this extra land is in conversion at this stage, no firm conclusions can be drawn. The available data do not allow an assessment of the sustainability of these increases.

In contrast, in Sweden, where both the number of farms and area devoted to organic farming is significant, the average size of organic farms is less than the average for all farms. The area under organic farming grew even faster than the number of organic farms over the last ten years, at an average of 28 % per year. In fact, the growth rate is well above 30 % for all countries except the United Kingdom, France, Germany, Luxembourg and the Netherlands. In general, growth has tended to slow down in the last five years.

Moreover, the average area of organic farms is increasing much faster than the average area of all EU farms. Between 1985 and 1997 it increased by 48 % compared to 29 % for all the holdings between 1987 and 1995.

However, in 1993-94, the number of organic farms increased by 38 %, but the organic area by only 15 %. This suggests that the large number of new holdings that became either certified or policy-supported as organic or in-conversion were mainly smallholdings. This explains the 11 % drop in the average area for that single year. The decrease is mainly due to changes in Greece, where the average area of organic farms decreased by 29 %, Germany (-20 %), Ireland (-19 %) and Italy (-6 %). For these four countries, 1993-94 was the first time since 1985 that the average area of organic farms did not increase.

In 1994-95, the average area remained unchanged for EU-15, but it increased again by 6 % between 1995 and 1996 and remained stable in 1997. The ranking of individual Member States, based on their contribution to the total Community organic land, also changed significantly in the last ten years. In 1985, 45 % of all EU-15 organic land was in France, compared to 7 % in 1997. The United Kingdom, which, at 6 %, ranked third in 1985, is relegated to ninth position in 1997, with less organic land than Denmark, although its total agricultural area is six times greater. On the other hand, in Italy, Austria and Spain, organic land has increased at a similar pace, putting these countries into the top four.

3.2.1.3. *Organic production*

The figures on area under organic farming, or 'in-conversion', only reveal how much land is used. To complete the picture it is important to know what is produced on the land. Some statistics on this are available, but there are no official reporting requirements for such data, and availability and quality varies considerably between countries. Given the interest in following progress on this topic, the Council for Agriculture has decided to gather more detailed information in the next farm structure census that will take place in 1999/2000. The data currently available are summarised below.

3.2.1.4. *Crops*

Organic land is subdivided into three main categories: arable crops, horticulture and grassland. A fourth category, as reported by Lampkin *et al.* (1998), may cover other land or land in-conversion but is mainly an unallocated adjustment figure that might also show double counting when negative.

The pattern of crops grown on organic farms does not reflect the general pattern seen in all the holdings covered by the Farm structure survey (FSS) 1995. Grassland is by far the most important land use for organic and in-conversion land area in Europe, covering 55 % of the total of such land,

Table 3.2.1. **Organic farming in EU (2000-preliminary data)**

Country	Area devoted to organic farming	% of the total agricultural area	Number of organic farming holdings	% of the total nº of holdings
Austria	287 900	8.40	19 741	7.31
Belgium	18 572	1.34	550	0.82
Denmark	146 685	5.46	3099	4.92
Finland	147 423	6.79	5225	6.60
France	316 000	1.12	8149	1.20
Germany	**452 279**	**2.64**	**10 400**	**1.95**
Greece	**21 280**	**0.61**	**4 923**	**0.60**
Ireland	32 478	0.75	1 058	0.71
Italy	958 687	6.46	49 018	2.12
Luxemburg	1 002	0.79	29	0.97
Netherlands	**27 820**	**1.39**	**1 391**	**1.48**
Portugal	**47 974**	**1.26**	**750**	**0.18**
Spain	**352 164**	**1.37**	**11 773**	**0.97**
Sweden	155 674	5.01	3 253	3.61
UK	380 000	2.40	3 000	1.29
EU-15	**3 345 938**	**2.60**	**122 359**	**1.75**

Source: www.organic-europe.net

whereas it represents only 40 % of the total land in the FFS 1995. Further investigation into this is warranted, as it is not clear if this is temporary grassland in-conversion, as opposed to land actually managed for livestock grazing or for fodder production.

Arable crops are grown on only 19 % of organic and in-conversion land area, as opposed to 46 % of all agricultural land, according to the FSS 1995. Eight per cent of organic and in-conversion land is used for horticulture, whereas in the FSS 1995 horticulture covered only 1.2 % of the total agriculture area in the EU. The importance of horticulture in organic or in-conversion farms clearly reflects consumer demand for organically produced agricultural products and foodstuffs.

After three years of discussions, on June 1999 the Agriculture Council reached a political agreement for the legislative harmonisation on the rules of production, labelling and inspection of the most relevant animal species:

bovine, ovine, goats, horses and poultry. Among other aspects the agreement deals with feed, disease prevention and veterinary treatments, animal welfare, livestock housing, management of manure, etc. GMOs are explicitly excluded from the food chain of animal organic production. Similarly, the Commission, in a further attempt to foster organic production, has proposed an EU label to identify food produced according to the EU organic standards.

3.3. Organic farming and certification system in the studied EU countries

3.3.1. **Organic farming in Germany**

Organic farming in Germany has a long tradition with different approaches united under the term. Biodynamic agriculture was initiated by Rudolf Steiner in 1924. He saw the farm as a living being, an organism. It was important for him, that there are non-material influences farmers can work with by using special biodynamic preparations. Organic agriculture (*organisch-biologischer Landbau*) was initiated by Hans Müller in Switzerland in 1950s. Müller´s aim was to make farmers more independent from industrial fertilisers and to achieve high soil fertility. One of the most important aspects of this kind of agriculture is to enable a closed farm cycle, with low input from outside (Neuergurg Padel, 1992).

Germany experienced two periods of growth in organic farming. During the first period from, 1968-1988, organic farmers organised themselves into producer organisations. These organisations stipulated the rules for organic agriculture and the processing of the products. In this period it was important to convince agricultural experts that organic farming methods can be practised successfully.

The second period from 1988 to the present started with the foundation of the umbrella association for the producer organisations AGÖL (*Arbeitsgemeinschaft Ökologischer Landbau*). Basic rules were developed, setting the framework for the different standards of the organisations. Table 3.3.1.1 shows the producer organisations that belong to AGÖL.

738

Table 3.3.1.1. **Members of the umbrella organisation of organic farming (AGÖL)**

Labels of the organisations	Agricultural area	Number of holdings
DEMETER	49 227 ha	1 341
BIOLAND	120 998 ha	3 451
BIOKREIS	5 243 ha	262
NATURLAND	51 548 ha	1 264
ANOG	2 745 ha	71
ECOVIN	981 ha	195
GAA	35 218 ha	327
OKOSIEGEL	1 487 ha	27
BIOPARK	116 125 ha	526

Source: AGÖL 2000a

In 1991, EU Regulation 2092/91 came into force providing the minimum standard of organic farming in Germany. Most of the German organic farmers are still members of one of the producer associations, even if this is no longer necessary for certification. Table 3.3.1.2 shows the development of organic farming between 1994 and 1998.

Table 3.3.1.2. **Development of organic farming in Germany from 1994 to 1998**

Year	Number of holdings farming		% of organic	Cultivated area (in ha)		% of organic farming
	total (*)	**organic**		**total (*)**	**organic**	
1994	578 033	5 866	1.01	17 209 100	272 139	1.58
1995	555 065	6 641	1.20	17 182 100	309 487	1.80
1996	539 975	7 353	1.36	17 228 000	354 171	2.06
1997	525 101	8 184	1.56	17 200 800	389 693	2.27
1998	514 999	9 209	1.79	17 232 800	416 518	2.42

(*) Holdings smaller than 1 ha are not entailed

Source: Bundesanstalt für Landwirtschaft und Ernährung (BLE) 1995-1999.

BEST COPY AVAILABLE

3.3.1.1. *Organic farming in the individual Bundesländer*

The role of organic farming in the different *Bundesländer* is shown in table 3.3.1.3. Organic agriculture developed very quickly in the eastern *Bundesländer* and exceeded the level of the western *Bundesländer* in some regions. The table shows the number of farms, which are members in one of the AGÖL-organisations.

Table 3.3.1.3. **Organic farming according to AGÖL-rules of different German Bundesländer in 1999**

Bundesland	Number of holdings	Organically cultivated area in ha	% of total holdings	% of total agricultural area
Niedersachsen	495	23 625	0.80	0.89
Thüringen	53	9 754	1.14	1.21
Nordrein-Westfalen	628	21 787	1.20	1.45
Rheinland-Pfalz	322	8 160	1.26	1.17
Hessen	374	17 011	1.38	2.26
Schleswig-Holstein	283	12 850	1.42	1.25
Saarland	35	1 740	1.97	2.46
Bayern	2 929	81 040	1.97	2.46
Sachsen	147	11 881	2.07	1.30
Baden-Württemberg	1 362	36 069	2.15	2.47
Sachsen-Anhalt	108	17 523	2.31	1.49
Hamburg, Bremen, Berlin	30	723	3.36	3.12
Brandenburg	249	58 380	3.81	4.33
Mecklenburg-Vorpommern	449	83 029	9.07	6.10
Total	**7 464**	**383 572**	**1.74**	**2.24**

Source: AGÖL 2000b

3.3.1.2. *The certification system*

According to EU regulations, each country has to register public authorities or private organisations to inspect organic farmers and processors of organic products. In Germany the different federal states are responsible for the administration of agricultural issues. Consequently this means the boards of inspection have to be registered in each individual federal state by the appropriate public authority.

BEST COPY AVAILABLE

In Hessen there are 15 private organisations registered to inspect farms and processors. They are checked and registered by the public authority *Hessisches Landesamt für Regionalentwicklung und Landwirtschaft* in Wetzlar.

Table 3.3.1.4. **Private boards of inspection in Hessen**

Name	Inspection of vine growers
BCS Öko-garantie GmbH Control System Peter Grosch Lacon GmbH	x
IMO Institut für Marktökologie GmbH	x
Alicon GmbH	x
Prüfverein Verarbeitung Ökologischer Landbauprodukte e.V.	
AGRECO-R.R.GÖDERZ	
QC&I Gesellschaft für Kontrolle und Zertifizierung von Qualitätssicherungssystemen GmbH	
Grünstempel e.V. EU-Kontrollstelle für ökologische Erzeugung und Verarbeitung landwirtschaftlicher Produkte	
Kontrollverein ÖKOLOGISCHER LANDBAU	x
INAC-International Nutrition and Agriculture Certification GmbH	
Kontrollstelle für ökologischen Landbau GmbH	
Fachverein Öko-Kontrolle e.V.	
ÖKOP Vereinigte Kontrolldienste	
GfRS - Gesellschaft für Ressourcenschutz GmbH	x, for ECOVIN
ECOCONTROL Ökologische Kontroll- und Zertifizeirungs GmbH	

Source: Hessisches Landesamt für Regionalentwicklung und Landwirtschaft, Wetzlar

3.3.2. Organic farming in Greece

Agricultural modernisation in Greece, unlike in other European countries, was slow. Traditional agricultural practices can still be found in various areas. Until recently the environmental damage caused by conventional agriculture could not always be seen. As a result, the idea of a conscious form of organic agriculture was hard to understand for farmers, consumers and even scientists. It is commonly accepted that certification, when possible, should be carried out by local bodies, i.e. people who are familiar with the peculiarity of local conditions.

The Bureau of Organic Products, Department of the Ministry of Agriculture, is responsible for everything concerning organic farming. It also deals with

BEST COPY AVAILABLE

supervision of the implementation of EU regulations, participation in meetings at European level, transfer of EU regulations into Greek legislation and supervision of certification and inspection processes.

In Greece, the inspection and certification of organic products is provided by three private organisations: DIO, SOGE, *Physiologiki*. These were established in the early 1990s, and each one has its own logo. These are also involved in other activities, such as:

(a) publishing of books and magazines;
(b) information on related subjects (e.g. genetically modified organisms);
(c) organisation of meetings for farmers and consumers.

The size of each certification organisation is shown in the table below.

Table 3.3.2.1. **Number of certified organic farmers by certification institute**

Year	Certification institute	Hellenic organic farming organ.	DIO	Physiologiki	OPEGEP (*)	Total
1994	No of Holdings	35	430	12	–	477
	%	(7.4)	(90.1)	(2.5)	–	(100)
1995	No of Holdings	76	485	15	–	576
	%	(13.2)	(84.2)	(2.6)	–	(100)
1996	No of Holdings	172	867	26	–	1 065
	%	(16.1)	(81.4)	(2.5)	–	(100)
1997	No of Holdings	813	1 623	63	–	2 499
	%	(32.5)	(65)	(2.5)	–	(100)
1998	No of Holdings	1 573	2 385	298	–	4 256
	%	(37)	(56)	(7)	–	(100)
1999	No of Holdings	1 960	2 566	397	–	4 923
	%	(39.8)	(52.1)	(8.1)	–	(100)

(*) has not started to certify yet

Source: Ministry of Agriculture, 2000

At this point it should be mentioned that the members of the DIO certification organisation recently created the DIO Scientific Institute for Organic Agriculture, in order to provide specialised information to companies, farmers and other bodies.

BEST COPY AVAILABLE

The role of the Ministry of Agriculture is to supervise the inspection and certification process through the collection of figures and archives and data checks. In the frame of EU Regulation 2078/92, several departments of the Ministry of Agriculture started to make random checks on organic farms. Through the EU Regulation 2078/92, transferred into a national regulation in 1996, organic farmers are able to receive subsidies. They were able to apply for financial support from spring 1996 to spring 1997 (Ministry of Agriculture, 1999). Afterwards, a new application period was introduced in autumn 1998 and is still current. This aimed at a more even distribution of organic farms across the country, concentrating on ecologically important areas. Each of the 52 prefectures determines the regions and products to be incorporated into the regulation. This means that only a few enterprises is included in the regulation and supported financially.

The national budget was estimated to cover 1000 ha in 1998, 8 000 ha in 1999 and 5 000 ha in 2000. Taking into account the 7 200 ha incorporated in 1997, the total area subsidised up to 2000 reached 21 200 ha. There will be another change in national regulation in the near future. The new rural development regulation under Agenda 2000 (EU Regulation 1257/99) will cause minor changes including organic animal production (Fotopoulos, C., 1999).

The successful implementation of regulations, however, depends on the level of information and advisory services farmers are provided with. The low level of information and the differences in the implementation of the national regulation by local offices of the Ministry of Agriculture have been problems for the Greek government. For example, EU Regulation 2078/92 requires documents and records from farmers, but the majority of them are unable to comply.

Subsidies for annual crop are small (EUR 170-300 per hectare), whereas those for perennial crops are higher (EUR 440-840 per hectare). As a result, many olive oil farmers have benefited from the regulation, whereas annual crop farmers were not influenced by the subsidy.

Finally it should be noted that apart from EU-funding, organic farming is not financially supported by the Greek government.

Organic farming in Greece is detailed in the following tables.

Table 3.3.2.2. **Cultivation of organic products in ha in Greece (1999)**

	1999			
Crops	Fully organic (in ha)	In conversion (in ha)	Inspection regime (in ha)	Total
Areas in fallow	9,8	38,1	5,4	53,3
Nuts	266,5	517,1	227,7	1 011,3
Vineyards	726,6	903,3	450,7	2 080,6
Olive trees	3 954,1	6272	2 398,2	12 624,3
Arboriculture-Citrus trees	429,8	1 022,2	436,9	1 888,9
Forage	177,3	231,3	277,7	686,3
Horticulture	106,2	80,5	92,6	279,3
Cereals	744,7	471,8	670	1 886,5
Legumes	38,6	22,4	14,2	75,2
Industrial plants	119,2	29	32,3	180,5
Aromatic plants	25,9	21,3	46,6	93,8
Others	74,9	140,7	254	469,6
TOTAL	**6 673,6**	**9 749,7**	**4 906,3**	**21 329,6**

Source: Bureau of Organic Products, 2000, DIO organisation, 2000

Table 3.3.2.3. **Organic cultivated area in Greece**

YEAR	CULT. AREA (ha)
1994	1 188.2
1995	2 400.9
1996	5 269.4
1997	9 999.5
1998	15 401.9
1999	21 452.5

Source: Ministry of Agriculture, 2000

3.3.2.1. *The certification system - public certification organisations*

Organisation for Certification and Supervision of Agricultural Products (*OPEGEP*) is newly established under the supervision of the Ministry of Agriculture with the following aims:

BEST COPY AVAILABLE

(a) the promotion and quality assurance of agricultural products;
(b) the protection of terms related to the origin of agricultural products;
(c) the promotion of environmentally friendly integrated crop management systems for agricultural and forestry enterprises.

OPEGEP has also introduced objectives for the beginning of certification procedures for:
(a) organic farming products;
(b) products with protected destination of origin (*PDO*);
(c) products with protected geographical indication (*PGI*);
(d) traditional certified products.

However, the institute has not yet been involved in the certification process of agricultural products.

3.3.2.2. *The certification system - private certification organisations*

Three inspection and certification organisations for organic products have been established:
(a) DIO (the poetic name for the ancient goddess of fertility, Dimitra), founded in 1993;
(b) *SOGE* (*Syllogos Oikologikis Georgias Ellados*) is the Association of Organic Agriculture in Greece, founded in 1985. In 1993 *SOGE* took action in the field of inspection and certification of organic products;
(c) *Physiologiki* (the natural one), founded in 1994.

These organisations are authorised by the Ministry of Agriculture to inspect and certify organic farms and products throughout the country.

3.3.2.3. *The certification system - farmers, consumers' and scientific organisations*

Several bodies are activating in various fields of organic farming. The Union of Organic Farmers of Greece (*EEBE*) represents Greek organic farmers at exhibitions, fairs and the Ministry of Agriculture. Its main activities are the lobbying for registration of organic inputs at the Ministry of Agriculture (i.e., traps, biological pesticides), and the organisation of weekly open markets for fresh organic products in Athens.

The Scientific Society for Organic Agriculture (*REA*) connects ecologically interested agricultural scientists in order to support and inform them about organic farming. *REA* is the name of the daughter of the gods of Earth and Heaven, and symbolises good hopes for the continuance of life.

The Workshop for Ecological Practice, organises lectures and fairs about organic farming in Thessaloniki. Recently years, it joined the 'Network for the

preservation and exchange of local varieties and native animal breeds'. The Union of Consumers of Organic Agricultural Products, the Network of Actions against Pesticides and for Organic Agriculture, plus other organisations, deal particularly with consumer information.

3.3.3. **Organic farming in Portugal**

Organic farming is not a new practice in Portugal. According to Silva (2000), the first initiatives date from 1976, and in 1985 the Portuguese Association of Organic Farming (*Agrobio*) was created. Until very recently, this association was the major institution responsible for disseminating and promoting organic production, especially through experimentation, exchange of experiences, and diffusion of information, among farmers and consumers. The number of organic farmers grew quite slowly from 1985 until 1990. Since then the growth rate has tended to increase.

In 1993, organic farming in Portugal represented about 3 000 ha, with Trás-os-Montes as the major production region by number of farms (23). About 50 % of this area was occupied by olive groves, followed by field crops (30 %), fruit trees, vineyards and horticultural crops. In general, the types of crops produced in each region or zone reflected the dominant agricultural system. In the case of Trás-os-Montes, olive production was clearly the most important.

Major changes occurred in 1996, since when the number of farmers and the area itself have grown quite considerably, as seen in the following tables. These changes were particularly influenced by the economic incentives related to the application of the CAP, Agri-Environmental Measures (EC Regulation 2078/92), which started at the end of 1994. These measures aimed at the maintenance of traditional extensive agricultural practices, and the conservation of nature and the rural landscape, with the view of preserving the areas most threatened by demographic regression and population ageing (Patrício *et al.*, 1999).

The Agri-Environmental programme, especially through direct income payments, encouraged the emergence of new organic farming operators, mainly farmers, particularly in Alentejo, Beira Interior and Trás-os-Montes, where extensive forms of production were already dominant. This explains the rapid growth of the area of olive groves, pastures and field crops. The farmed area supported by the programme grew from 901 ha in 1995 to 9 938 ha in 1997, and the number of supported holdings from 166 to 226. This represented, however, a very low percentage of the Agri-Environmental programme commitments: 1,82 % of the area and 0,17 % of the agreements in 1997 (Forest and Lampkin, 1999: 18-27).

Table 3.3.3.1. **Growth of organic farming between 1996 and 1999**

	Nº of Holdings	Rate growth (%)	Cultivated area (ha)	Rate growth (%)
1996	240	—	9 188	—
1997	278	15,8	12 193	32,7
1998	564	102,8	29 622	142,9
1999	750	24,8	47 974	61,9
1996-1999	—	2 12,5	—	389,4

Source: Guia dos Produtos de Qualidade 2000

At the end of 1999 the situation was as follows:

(a) organic farming represented 47 974 ha, that is about 1 % of the cultivated area in Portugal;

(b) the number of operators (farmers, processors and sellers) was 750;

(c) Alentejo, in Southern Portugal, became the major region of organic farming, both in terms of area (22 917ha) and number of operators (382), followed by Beira Interior (17 446 ha and 140 operators);

(d) Trás-os-Montes became the third region, with 5 840 ha and 144 certified operators;

(e) across the country, olive production was dominant, representing 40 % of the area, followed by pastures, representing 24 %. Cereals, fruits, aromatic herbs and horticultural products came next in the order of importance.

In spite of the rapid growth in recent years, organic farming still has very little expression in Portugal, as observed in table 3.3.3.2. Comparisons with conventional agriculture are difficult, but, according to the available figures organic farming in 1999 represented only 6 % of the olive groves, 1.5 % of the pastures, 0.7 % of the fruit orchards and 0.4 % of the vineyards.

Table 3.3.3.2. **Area of production in conventional and organic farming for selected crops (ha)**

	Conventional (*)	Organic (**)	
		Nº	%
Fresh fruits	94 385	693	0.37
Olive Orchards	330 336	19 415	5.93
Vineyards	239 720	883	0.37
Pastures	736 521	11 339	1.54

(*) MADRP, 1998: p. 17, based on RGA/89 and Survey of Farm Holding Structure/1995

(**) Guia dos Produtos de Qualidade 2000

BEST COPY AVAILABLE

Future development of this type of sustainable agricultural production requires detailed consideration, taking into account a number of limitations and difficulties, such as (Cristóvão e Pereira, 1995; Firmino, 1999d; Silva, 2000):

(a) difficult access and the high cost of special inputs (fertilisers, manure, pesticides, etc.);
(b) lack of research, experimentation, demonstration and extension efforts;
(c) insufficient number of training initiatives directed to farmers, technicians, other operators and consumers;
(d) reduced demand in the Portuguese market, in spite of the continuous growth;
(e) poor commercialisation and marketing structures and practices.

3.3.3.1. *The certification system - supervision at national level*

The supervision function in mainland Portugal is performed by the Ministry of Agriculture (*MADRP*), through the Division of Product Quality Promotion (*DPQP*), which is part of the General Directorate for Rural Development (*DGDR*). It is important to stress that Portugal has no specific regulations concerning organic farming, following strictly the EU ones.

This division is responsible for supervision of the legal aspects and processes concerning the certification of all agricultural and food products. In terms of organic farming, the *DPQP* follows the situation at the EU level, particularly in the production of legal documents (rules and regulations). It receives the applications of new operators, manages a database of operators, recognises and monitors the control and certification institutions, and verifies sanction processes.

In the two autonomous regions of Portugal, Azores and Madeira, this role is performed by regional organisms, the Institute of Food and Agricultural Markets in the first case and the Regional Agricultural Directorate in the second one.

3.3.3.2. *Private and independent control and certification institutions*

Until recently, there was only one active certification institution, *Socert*-Portugal, created in 1994. This institution is associated to a network - *Ecocert* - also operating in Belgium, France, Germany, Italy, Luxembourg and Spain, and other countries in Latin America.

Socert has a directive council, which defines the policies, and a certification commission, which acts as an independent board. The major missions of this Commission are to apply and monitor the rules and criteria related to the attribution and renovation of licences and guarantee

certificates, as well as all sanction processes. This institution is exclusively dedicated to organic farming and works with all kinds of production processes, as well as with processed products. Control visits to organic operators take place twice a year, on average. To accomplish its missions, *Socert* has frequent contact with laboratories. Collaboration with research or higher education institutions is very rare.

A second private and independent control and certification institution was also created in 1994, but was only recently recognised by the Ministry of Agriculture to work in the organic farming sector. It is called *Sativa*, and it is located in Lisbon. *Sativa* also has a certification council, which advises the enterprise on control and certification matters related to agro-food products. This council comprises representatives from different relevant sectors of activity.

It is important to stress that *Sativa* operates both with organic and conventional agro-food products, while *Socert* is strictly specialised in organic ones. So far, *Sativa* has worked mainly with producers of cereals, grapes, olives and olive oil, and is starting to follow beef producers. Control visits take place at least once a year, with 30 % of the operators visited a second time, depending upon the impressions obtained in the first visit. Special visits are also carried out to stores certified to sell organic products. To perform its functions *Sativa* works closely with laboratories, but very rarely contacts research or higher education institutions.

3.3.3.3. *Associative movement*

The associative movement has been growing continuously, especially in the last five years. The first national association, however, was created in 1985. Today, there are six regional associations, covering almost the entire country, mainland and autonomous regions.

Agrobio (*Associação Portuguesa de Agricultura Biológica*), a non-profit organisation, was originally the only national association. It was created in 1985 and membership comprises consumers, producers and technicians, representing in this way a variety of interests. Its major activities are broad: technical support, though much more in the past than today; training, mainly through farmers' courses; dissemination of information through publications and regular public events; participation in research and experiments; promotion of organic farming; and, until 1993, certification and control.

A second national association, *BIO-ANA*, was recently created but we have no information about its aims and activities.

3.3.3.4. *Regional producers' associations*

All regional associations were created after 1995, and most of them after 1997. They are now total six:

(a) *AABTM* (*Associação de Agricultores Biológicos de Trás-os-Montes*), created only in 1999 and working in the interior part of northern Portugal. Its main objectives are to provide training and technical support to associated farmers;

(b) *DA TERRA* (*Associação Agrobiológica do Norte*), producers' association operating in Entre-Douro e Minho, northern Portugal;

(c) *AJAMPS* (*Associação de Jovens Agricultores da Madeira e Porto Santo*), created in 1995 in the Autonomous Region of Madeira. Since then it has helped to reconvert 25 ha involving 17 certified producers. Major activities are related to information, training, extension and experimentation;

(d) *ARABBI* (*Associação Regional dos Agricultores Biológicos da Beira Interior*), created in 1996, presently representing about 150 farmers, mainly producing fruits, olives and olive oil, cereals, forages and different types of animals. The average farm size is about 200 ha. The association mainly helps producers to access EU and other national subventions,

(e) *NATURA* (*Associação Açoreana de Agricultura Biológica*), created in 1997 in the Azores Islands. The associated farmers produce horticultural crops, citrus, chestnuts and a variety of tropical and sub-tropical fruits. This association also works intensively with schools, to develop young pupils' consciousness on environmental and agriculture issues;

(f) *SALVA* (*Associação de Produtores em Agricultura Biológica do Sul*), created in the Algarve, southern Portugal in 1997, and working in the regions of Alentejo and the Algarve. The associated farmers produce a variety of products, including horticultural ones, fresh fruits, aromatic and medicinal plants, dried fruits, jams and natural cosmetics.

Most associations promote organic farming through information, training, extension, and experimentation activities. *Natura* and *SALVA* are also active in organising the commercialisation process.

3.3.4. **Organic farming in Spain**

Organic farming in Spain started in the 1970s. Small farms, mainly controlled by young people, converted in the middle of the 1970s, the first noteworthy project being the conversion of the Calasparra (Murcia) rice cooperative.

Further development of the movement took place in the late 1980s and it has grown tremendously since then, with the number of producers expanding considerably. In 1991, there were only 4 235 hectares planted with organic

products, while in 1998 there were 269 465 ha and 352 164 ha in 1999. Since 1997 (when the figure was 152 105 ha), the area devoted to organic farming has been more than doubled. Similarly, greater health awareness has resulted in expansion of demand for quality, 'natural' and 'healthy' products. However, consumption of organic products in Spain remains relatively limited, with organic foods estimated to account for less than one percent of total of the food market. Organic production is certified by the authorities in each of Spain's autonomous regions and by other private institutions.

Spain is much more of an organic farming producer than a consumer. The natural conditions of the country (relatively moderate use of agrochemicals, numerous ecosystems and a favourable climate for early-cultivation) have promoted the introduction of organic agriculture, but up to now there has been no home market with stable trade structures. More than three-quarters of the production (for the most part typical Mediterranean crops) is exported, mainly to central and northern European countries.

3.3.4.1. *Evolution and development of organic agriculture in Spain*

The number of organic farms has increased twelve-fold between 1994 and 1999, and the number of processing companies has more than trebled. At the moment (1999-2000) there are 11 812 producers (0.9 % of all farms) and 526 processing companies, and the total land area in Spain is of 352 164 ha. In 1999 the trade in organic products was ESP 17.367,7 millions. (EUR 104.4 millions). In the same period, the organically farmed surface rose from 17 208 to 352 164 hectares (1.4 % of the agricultural land). The average size of an organic farm (30 hectares) is higher than the conventional average (18 hectares).

Table 3.3.4.1. **Evolution of organic farming: producers, processors, operators and organic land area in Spain. Period 1994-1999**

	1994	1995	1996	1997	1998	1999
Producers	909	1 035	2 161	3 526	7 392	11 812
Processors	157	198	240	281	388	526
Operators	1 066	1 233	2 404	3 811	7 782	12 341
Land area ha.	17 208	24 078	103 735	152 105	269 465	352 164

Source: Control Authorities of Organic Agriculture in Autonomous Communities, Spain

BEST COPY AVAILABLE

3.3.4.2. *Distribution by type of product and farm structure*

As indicated, the total land area in Spain devoted to organic production was 352 164 hectares in 1999 and the trade in organic products was ESP 17 367,7 millions (EUR 104,4 millions). The distribution of total land area of organic farms by type of product can be found in the following table.

Table 3.3.4.2. **Total land area by type of product in organic holdings in Spain**

Product	1999, Land area, ha.
Cereals and legumes	39 549,40
Vegetables	2 222,95
Citrus	809,84
Fruit trees	13 043,94
Olive trees	65 017,80
Vineyard	8 767,85
Sech fruits	9 681,64
Subtropicals	422,09
Aromat. / Medi.	677,71
Forest and natural resources	16 253,32
Pasturages, forages	182 811,67
Green fertiliser	12 236,33
Seeds	30,71
Others	639,01
Total	**352 164,26**

Source: Control Authorities of Organic Agriculture in Autonomous Communities, Spain

The amount of organically farmed land is not directly related to the number of farms in a region. For example, in Andalucia, 2 489 producers cultivate only 62 318 ha. In Castilla y León, by contrast, only 191 producers cultivate 43 245 ha (year 1999).

The property structure in the south and in the middle of the country is characterised by large farms, with agricultural workers managing the land. In the north and in some parts of the east, the agricultural land is very splintered. Most farms here are family run.

Based on its diverse climatic conditions (ranging from continental to Mediterranean) Spain has the prerequisites for cultivating a large product range. The following products (listed in the order of importance) are cultivated

in organic agriculture: grain, vegetables, citrus fruits, fruits, olives, grapes and wine, nuts, subtropical plants, medicinal and aromatic herbs, and animal fodder. Nonetheless, the market structure is still not well developed, and a lack of adequate distribution channels for organic products prevents widespread consumer familiarity. As a result, overall consumption of organic products is estimated to be less than one percent of total food consumption. Producers find it is easier to market through experienced exporters, who collect the products at farm level, then transport and distribute them to destination markets. However, producers are taking steps to eliminate intermediaries in an attempt to reduce the final price to consumers and stimulate demand.

In Spain the pioneer organisation in organic agriculture and related matters is the *Asociacion Vida Sana*. This association was created in 1974 to fill a need for an entity that could set the basis for organic agriculture. Since 1983 it has taken part in the establishment of organic products in Spain through the Ministry of Agriculture. *Vida Sana* also organises courses to promote organic agriculture. In 1985 it organised the first *Biocultura* show in Madrid, following this in 1993 with a show in Barcelona, and in 1996 in Sevilla. In 1998 about 137 000 people visited *Biocultura* in Madrid. Visitors to *Biocultura* Barcelona, May 7- 10, 1999, were about 65 000. However, there were only 12 000 visitors at *Biocultura* show in Seville, March 12-14, 1999.

There is no central organisation providing advice in the area of organic agriculture. However, small, specialised cooperating organisations do exist (for example, *ATAB*, *Asociación de Técnicos para la Agricultura Biológica*, or association of organic advisors). Advice is mainly given by private advice-offices however. One has to emphasise that an increasing number of well-trained specialists in organic agriculture are available, guaranteeing good advice for farmers and processors. Small producer groups also exist, frequently organised in cooperatives and employing an advisor. Some departments of the agricultural administration offer advice on biological pest control, with very positive results. Furthermore, the regional offices of the agricultural administration organise advanced training events for farmers.

3.3.4.3. *The certification system*

In Spain, the control of organically produced products is provided by local Departments of Agriculture of Autonomous Communities, or directly by General Directions of the Ministry of Agriculture. In Catalonia inspection and certification are enforced by the Catalan Council for the Production of Ecological Agriculture (*CCPAE*), created by the 28/1994 Decree on 21 January. This entity depends on the Department of Agriculture, Live-stock and Fishing of the Autonomous Government of Catalonia, and is in charge of

inspecting and certifying all food products of animal and plant production, processed or not, obtained in Catalonia. The same situation applies with other Autonomous Communities with such competences (Aragon, etc.).

3.3.4.4. *Identification*

Only products cultivated according to organic farming regulations are permitted to use the appropriate label: ecological, biological, organic or biodynamic, eco- and bio- prefixes. The *CCPAE* guarantees the fulfilment of this regulation by identifying the products manufactured in Catalonia with its logo, exclusive to these products. The same is true of other Autonomous Communities.

3.3.4.5. *Inspection Process*

EC Regulation 2091/92 establishes that the regulating authority must make a minimum of one visit per year to each subscribed organic holding, with 20 % of inspection visits being without appointment.

3.3.5. Organic farming in the Netherlands

Within Dutch agricultural production as a whole, the segment of organic agriculture is still a very small one. However, there is a strong growth in the number of holdings and in the number of acres used for organic production, in particular since the beginning of the 1990s (see table 3.3.5.1).

Table 3.3.5.1. **Number of organic holdings and number of acres used for organic farming**

	nr. holdings	nr. acres (ha.)
1993	455	11 150
1996	554	14 330
1998	962	19 300
1999	1 216	22 997
2000 (May)	1 277	24 217

Source: Ministerie van LNV; EKO-monitor Platform Biologica

In 1999 there were 1216 farms with organic production, which is 1.18 % of the total number of agricultural holdings in the Netherlands. The 1277 in May 2000 are 1.24 % of the total number. In 1998 and 1999 in particular the number of holdings grew strongly, with over 200 per annum. In the years before, the growth rate was less, with an average of 60 holdings per year. Of

the 1216 holdings which existed in 1999 a total of 936 were 'certified' holdings. They produced according to the criteria for 'organic production' of the *Stichting SKAL*, a body for quality certification in organic farming, recognised by the Dutch government (see sections below). In May 2000 the number of *SKAL*-certified holdings had risen to 989 (*EKO*-monitor, 2000).

Since the beginning of the 1990s the number of acres used for organic production has more than doubled. However, it is still a very small proportion of all the land that is used for agriculture. In the Netherlands approximately 2 million acres are available. In 1998 circa 0.9 % of this total amount was used for organic farming. Since then, this figure has steadily risen, from 1.02 % in April 1999 to 1.10 % in September 1999 to 1.15 % in January 2000. The latest figure is 1.21 % in May 2000 (*EKO*-monitor, 2000).

Besides the rise in consumer demands, there are two important factors that gave rise to this increase in growth of the organic segment in agriculture during the 1990s. The first was the introduction of organic products in some large supermarket chains in 1991 and 1992. A second factor was the introduction of special governmental measures at national and local level in the mid 1990s. These measures were targeted towards the promotion and (financial) stimulation of production and distribution of organic products (see section below).

Table 3.3.5.2 shows a breakdown of the 1216 organically producing holdings in 1999 into different types of holdings. In this table the holdings are classified according to their major activity. It is important to remember, however, that many holdings in organic farming have a 'mixed' character, in the sense that they have both plant and animal production. In many cases - particularly in organic-dynamical agriculture - this mix of activities is part of the holdings' philosophy. It is a way of creating and upholding natural life cycles and ecosystems.

Table 3.3.5.2. **Breakdown of total number of holdings according to major activity (1999)**

Total number of organically producing holdings *	1 216
Horticulture	24.5%
Fruit growing	6.0%
Arable farming	24.0%
Cattle breeding	42.0%
Other (e.g. plants, mushrooms)	3.5%

Source: EKO-monitor, 2000

BEST COPY AVAILABLE

In gross terms, this division has not changed much during the past three to four years. Horticulture and cattle breeding have already been major subsectors in organic farming for a long period of time. In recent years, the number of organic cattle breeders appears to have risen somewhat faster than other types of organic farming. In 1999, for instance, 109 new cattle breeders entered the scene, from a total of 246 new producers in the whole year. Most of these breeders specialised in dairy produce. The strong rise in this subsector can be explained by the rise in organic dairy produce consumption, the introduction of new EU regulations regarding animal production and a specific 'conversion' arrangement for cattle breeders from the Dutch government (*EKO*-monitor, 2000). Currently, 60 % of the acreage used for organic farming is grassland (CBS, 2000).

3.3.5.1. *The certification system*

In the Netherlands, several bodies have developed a system for the quality certification of agricultural products, produced with methods friendly to the environment. Two certificates are specifically aimed at organic production: *EKO* and *Demeter*. The other three are not specifically organic, but they certify products cultivated in an ecologically responsible way. One of them is the general certificate *Milieukeur*. The other two are special certificates for eco-friendly eggs and chicken products and for pork-meat production.

SKAL has four different types of certificates:

(a) a company certificate, for production of own products; this certificate gives a farmer the right to use the titles of *EKO* and *SKAL*;
(b) a product certificate, for trading of products under one's own name, also with the right to use the *EKO* and *SKAL* titles;
(c) a process certificate, for the opportunity to process own products or products of other farmers;
(d) an import certificate, for the import of products from outside the EU.

Here, we will discuss *EKO* and *Demeter* - the special systems for organic products - in more detail.

3.3.5.2. *EKO-certificate*

The *EKO*-certificate is currently the most widespread quality certificate for organic products. Control of the *EKO*-certificate lies with *SKAL*, the *Stichting Keuring Alternatieve Landbouw*. *SKAL* has been active in organic agriculture since the 1980s and is the sole body in the Netherlands authorised by the government to control and certify organic production according to EU regulations. *SKAL* has developed a specific certification programme for organic production, which in principle might be applied to all types of

production, both plant and animal production. The concept 'organic' is legally protected in the Netherlands and farmers who want to produce and sell 'organic' products in one way or another are legally obliged to join *SKAL* and to undergo an independent inspection procedure according to the *SKAL*-system.

The *SKAL* organisation has two specific departments: one for certification and one for the control of products and companies. The certifying department is assisted by a 'board of experts', who are responsible for the establishment of the norms, regulations and procedures according to which farmers and products might be certified. There are separate boards of experts for different branches of agriculture and, inconsequence, different types of agricultural products.

3.3.5.3. *Demeter-certificate*

Demeter is the trademark of the smaller segment of biodynamic agriculture. Farmers and distributors who want to trade with the *Demeter*-certificate have to meet additional criteria beyond the ones already applicable for *EKO*-based organic production. These criteria relate to the ideological principles of this specific kind of sustainable agriculture. For instance, there are basic requirements regarding the creation and maintenance of ecological cycles, the balancing of food production and soil exploitation, the balancing of processes at the farm and in the environment, sympathetic human interventions and natural influences. Animals are fed with crops from the land itself.

The controller of the *Demeter*-certificate is the *Vereniging voor Biologisch-dynamische landbouw en voeding* (*BD-vereniging*). Since 1937 this body has promoted organic and dynamic forms of agriculture in the Netherlands and stimulated the development and transfer of knowledge and expertise in this field. The institute is financed by its members, e.g. producers, processors and distributors of organic-dynamical products (*BD-vereniging*, 1999). Different types of activity are undertaken:

(a) information services regarding organic-dynamical agriculture;
(b) consultancy services in this field;
(c) promotion through contacts with other bodies, news magazine, information leaflets;
(d) certification of companies and products (*Demeter*);
(e) cooperation with *SKAL* in control and inspection procedures;
(f) organising and supporting conferences, seminars, study-groups etc.;
(g) information services at schools.

Through these activities the institute tries to increase the awareness of the merits of eco-friendly agriculture and to stimulate concrete projects and cooperation between farmers in this field.

3.3.5.4 *Other certificates*

The other three certification systems mentioned above are not specifically linked to the organic production segment.

Milieukeur is a general quality certificate for all kinds of products, including food. Applied to food products it guarantees that the food is produced in a way that is friendly to the environment, with less use of chemical fertilisers and herbicides. The controller of the certificate is the *Stichting Millieukeur*, an independent joint body, representing several parties: consumer organisations, producers, retail trade, organisations from the environmental movement and the government.

CHAPTER 4

Education, training and innovation transfer

4.1. The theoretical framework

Before we define the meaning and the role of environmental education, it is essential to clarify some important terms.

Environment: this can be taken to mean a multifold reality, which includes the places, the people, the institutions, the meanings and the values that influence a physical/natural condition or a society or a unique person. The more determined and dynamic the influence of human actions on the modulation of the environment, the more we talk about a rapidly developing culture.

In general, the influence of human actions on the environment comes from:

- the utilisation of various forms of energy;
- evolution in technology and the use of means and instruments;
- implementation of the technology in fauna and flora.

Several scientists consider human influence, direct or indirect, as the major, and possibly unique, factor of biotic destruction. Direct interferences are:

- hunting;
- agriculture;
- forest declamation;
- mining activities.

Indirect interferences are:

- the influence of chemical substances on the food chain (use of agrochemicals, etc.);
- by-products or industrial wastes;
- negative influence on the environment from the use of energy forms (i.e. nuclear).

Natural resources: these play an important role on a number of fronts, though the simplest definition is of the 'materials' used in production for the benefit of humans. The value of a resource is dynamic, relevant to its

development and demand for it from society. The history of mankind, in relation to the environment, offers a continuously changing picture of the evaluation and exhaustion of natural resources.

Environmental crisis: the meaning of 'environmental crisis' risks being diminished due to repeated use of the term, despite its constant relevance. The present crisis must be considered as the basis for changes in current social perceptions, in turn demanding input from education.

Environmental culture: this is the factor that determines our quality of life for the future, as well as the development of the world. There is a need for 'ecology' and 'pedagogic' policies to be combined in order to pass responsibility to future generations.

Environmental education: this can contribute to the formation of new perceptions, attitudes and behaviour, capable of developing new social and cultural values. 'Environmental education is the formation of those pedagogic conditions that direct to the development of an attitude, which will help us to perceive the effects of human activities on the environment' (Koutsouris, A. 1997). Additionally, environmental education can be distinguished in education 'in', 'about' and 'for' the environment. The debate on these aspects of environmental education has criticised the limitations of education in and about the environment as forms of interpretivism and positivism e.g. 'weak' education for sustainability or education about sustainability, while education for/with the environment is the key to any ecological educational paradigm.

Innovation: Every innovation is a new idea or a group of ideas. The implementation of new methods and techniques in agriculture may be considered as innovation, because it diversifies from the existing ideas, practices, methods or techniques. The 'innovator' is the person who, in a specific place (geographical area, social system) and time, precedes the others in the implementation of a new idea. Innovation in agriculture relates to every new discovery of technique, method or practice in the field of agronomy research, which is presented as new to the farmer and can be applied in the farm or in the rural household.

Dissemination: the acceptance of a specific idea or practice from persons or groups connected with specific communication channels within a social system.

Transfer of know-how: the pioneers in organic farming in Greece considered it an alternative solution to the problems caused by conventional intensive agriculture and aimed to disseminate their ideas. That aim has been achieved to some extent. Those involved in agriculture (the ministry, teachers, graduate students, agronomists, research institutes and many farmers) are now well informed about organic farming, ecology, environmental protection, etc., and are aware of the negative effects of conventional agriculture. Research and technology, plus the work of experts in the field and the laboratory, have contributed significantly. For many crops, especially olive trees, vineyards, and citrus fruits, the required know-how is now available to help both the organic farmer and the final consumer.

Quality assurance: the agro-industrial sector within the EU has to meet the challenges of the World Trade Organisation, Agenda 2000, and changes in consumer patterns. The transformation of agriculture from 'quantity oriented' to 'quality oriented' is major element in competitiveness though the production of quality, healthy and safe products for the consumer remains a major objective of agricultural production. Research and technology aim for the implementation of a multidimensional concept of 'quality' of agricultural products, which includes: certification, marketing channels, health, sensory characteristics, and nutritive value.

4.2. Agricultural education and training within EU

Education and training in the agricultural sector form an integral part of general education and training in EU countries. Training is organised differently under the various educational systems according to the country's national policy. The distinction between initial and continuing vocational training allows several groups of employed or unemployed people to attain the appropriate skills required for working in several sectors of agriculture.

4.2.1. **Agricultural education and training in Germany**

4.2.1.1. *Administration and public extension of the agricultural sector*

Due to the federal organisation of Germany, public authorities are on different administrative levels. Education, training and extension are mainly organised by regional authorities. It depends on the individual federal state whether the extension is carried out by the public authorities themselves or by private organisations. Public extension for a single enterprise is no longer free in all

federal states, though some federal states give subsidies. In many places extension for nature and environmental issues is still free, since the whole of society is concerned and farmers who are informed about the environmental effects of management methods are beneficial to the whole society. In most of the federal states the authorities offer extension to farmer groups or working teams (Gerber, 1994).

4.2.1.2. *Education and vocational training in the agricultural sector*

There are different levels of education in the agricultural sector, depending on the level of school education. One option is vocational training. The system in Germany can be described as a dual system. Pupils work on training farms for three years, during which time they also go to a vocational school one or two days during the week, where they are taught the necessary background of farming. The curriculum for vocational schools is stipulated by the Ministry of Education and the Arts.

Initial vocational training is provided by both the company and the school. The Federal Act applies to in-company training while the *Länder* are responsible for the colleges. Employers and employees are represented on committees organised at different levels. They take part in planning training, designing and specifying the content of programmes, fixing the length of training and organising courses. Several collective agreements govern continuous vocational training, such as the collective agreement for a qualification fund for agriculture and forestry, which requires all private companies to contribute towards a qualification fund. The qualification fund aims at providing capacity for re-adaptation and re-skilling of workers. Training successfully followed under the dual system leads to the award of a diploma.

Continuous training courses for vocational adaptation, occupational advancement and re-skilling are offered by public bodies and by private institutes. Course content and the duration and organisation of courses are coordinated at regional or federal level. 'Occupational advancement' courses are from three months to three years. 'Occupational adaptation' courses concern information meetings, in-company courses and seminars lasting several days or weeks. Continuing training activities offered by public or private training institutes result in the issue of certificates.

4.2.2. **Agricultural education and training in Greece**

In Greece the Ministry of Education and the Ministry of Agriculture are jointly responsible for education and training in the agricultural sector. The Ministry of Labour is concerned with apprenticeship and continuing training through the Employment Office.

On completion of compulsory education, young people aged 15 may enter the technical vocational schools or obtain training under an apprenticeship. These schools include an agricultural technical studies department, and the length of study is three years. After completion of the studies a certificate is awarded. The Employment Office provides technical and vocational training under the initial vocational training and apprenticeship system. The courses take three years including school training and rehearsal. At the end of the studies a diploma is awarded. Post-secondary vocational education is provided by public or private training institutes or by business and industry appropriate to the subject matter taught. A certificate of vocational training is obtained committing the holder to take examinations resulting in the award of a diploma.

The agricultural training centres (*KEGE*) supervised by the Ministry of Agriculture offer initial and supplementary training. Courses are attended by independent farmers, agricultural workers and agricultural technicians. Supplementary education and continuing vocational training programmes are organised for employees and the unemployed. Agricultural cooperatives and the Greek Chamber of Technology and Agriculture provide continuing training programmes in the agricultural sector. Entry to continuing vocational training schemes is free. However, it is governed by agreements between employees and employers. Trainees receive an allowance.

4.2.3. **Agricultural education and training in Portugal**

Vocational agricultural schools (*Escolas Profissionais Agrícolas*) prepare technicians in production agriculture as well as in vocational areas associated with rural employment, for example, within landscape management and rural environmental tourism. These schools are under the control of the local municipal government. At this local administrative level, the schools relate quite well to the local agricultural sector through their vocational curriculum. The general secondary curriculum is also an obligation for student preparation, linking students to environmental education. Graduates can choose to be employed within the agricultural sector or pass an exam for entry into the higher educational system.

These vocational schools provide preparation for employment and the opportunity for formal higher education. Those graduates will normally enter higher education according to their undergraduate degrees in animal science, forestry or agronomy. Neither educational level offers specific training in organic farming. However, one can find instructors who integrate organic farming concepts in traditional agricultural disciplines.

Most trainees follow initial training or education segregated into two main

programmes: technical and vocational training and secondary vocational education. The age of entry into these programmes ranges from 14 to 17 years. The length of the programmes varies from one to three years. Twenty-five agricultural vocational schools offer in-school training ending with a diploma after three years' attendance. The higher Agronomy Institute and four other universities offer first degrees in several areas of agricultural science.

Training is provided by the technicians of the Ministry of Agriculture and by other skilled technicians. The secondary vocational education programme offers a diploma equivalent to that issued on completing secondary education. The technical and vocational training programme offers a diploma on completing secondary studies and a technological training diploma.

Continuing vocational training is supervised by the Ministry of Agriculture and includes certification and registration. The Ministry of Agriculture offers courses for all-round workers and for specialist workers, retraining courses and seminars and meetings for farmers and agricultural technicians. A system of school and vocational certification has been set up to provide evidence of the skills obtained outside the school system of education and training.

4.2.4. **Agricultural education and training in Spain**

Recent educational legislation established the following educational/ training structures:

(a) pre-school education: up to three years and three to six years;
(b) primary education: six to twelve years - this stage is divided in three cycles;
(c) compulsory secondary education;
(d) obligatory secondary education (*ESO*);
(e) social guarantee programmes;
(f) academic secondary education (*Bachillerato*);
(g) middle degree vocational training;
(h) superior degree vocational training.

Universities are autonomous entities, which provide education as follows:

(a) official title acknowledged by all the Spanish institutes;
(b) academic bachelor degree.

Vocational training policy is in the responsibility of the government, decided under the national occupation training programme and prepared by the General Vocational Training Council. Vocational training in agriculture falls under the aegis of the Ministry of Education and Science or the Ministry of Agriculture.

There is an initial training programme specific to the agricultural sector which includes theoretical training and rehearsal and follows compulsory education. In 2001 a new system of training has been introduced: all students receive vocational education within the framework of compulsory secondary education and the second grade of secondary education. Under this new system, the object pursued under the specific training options is immediate occupational integration. All students must follow an in-company practical module. Training successfully completed as part of full-time vocational education results in the award of specific certificates or diplomas.

Continuing training is developed within the programmes undertaken through financial facilities obtained within the framework of the national continuing training agreements. Workers can claim their right to attend continuing vocational training under the conditions laid down in the collective agreements. Training is included in a list of vocational diplomas under the educational system and in a listing of vocational skill training issued by the Ministry of Labour. Workers can obtain vocational aptitude certificates on the completion of training cycles, similar to specific vocational education cycles except they are much shorter in length and the content is more practically aligned. Employees are entitled to full pay while attending these courses.

4.2.5. **Agricultural education and training in the Netherlands**

Vocational agricultural education is given at a number of agricultural high schools (higher level) and a number of regional centres for agricultural vocational education (*Agrarische Opleidingscentra – AOC*s: medium and lower level). Most trainees undergoing agricultural vocational training and education are entered for one of the secondary vocational education schemes on a short-, medium- or long-term basis. The others are enrolled under an apprenticeship scheme and undergo training within a working environment but also on courses at a training/educational institute (*AOC*). Five certificates are required for each diploma; each certificate consisting of two or three modules divided into five priority objectives.

Continuing education and training is shared between public and private teaching institutes. Continuing vocational training in agriculture is offered at *AOC* centres, which are managed by an autonomous administration formed of representatives of employers' organisations. Certain boards also include representatives of the trade union organisations (*STOAS*) and local authorities. A small part of teaching is offered at three innovation and practice centres. The training fund for employees in the agricultural sector pays the cost of courses; the employer receives a payment from the wage of the employees undergoing training. The employee receives half of his wage if his

is a full-time worker and a reduction of 10 % in his wage in the case of part-time employees.

4.2.6. **Environmental education and vocational training in Germany**

In Germany the individual Bundesländer are responsible for education and subsequently also for environmental education. In 1974 the head office for political education *'Bundeszentrale für politische Bildung'* emphasised the importance of interdisciplinary environmental education across all educational establishments. Environmental education should not only try to reduce environmental damages but also work towards a responsible design of the environment (Schleicher, 1995).

Since the mid 1970s, environmental aspects and problems have been included in the curriculum. However, the reality frequently lagged behind political-educational claims. Since the mid 1980s, the correlation between social and natural systems on a larger scale have been taken into account, followed, in the mid 1990s, by a focus on action (Schleicher, 1995).

Environmental education also takes place to a great extent outside state education institutions. Facilities such as environmental and conservation centres are partly financed privately or by public funds. The financing is often a great problem. There are more than 200 environmental education centres in Germany and an association for nature and environmental education (*Arbeitsgemeinschaft Natur- und Umwelterziehung*) (Graf, 1997).

The following statements on education on environmental problems for schools are part of the concept 'ecology and environmental education' (Pieters, 1997):

(a) environmental education shall refer to concrete partial systems. With delimited areas within the biosphere, questions of the environmental protection shall be treated and be learned by pupils. These areas shall be chosen so that they are subject to an influence of the man, having social meaning and are stamped by clashes of interests by different groups;

(b) at this opinion systems must be consulted on a scientific or extra-scientific base;

(c) ecological points of view like networking, historical importance and being in process shall conduct the education in environmental problems.

4.2.7. Environmental education and vocational training in Greece

4.2.7.1. *Environmental education in general high schools and in technical vocational agricultural schools (secondary education)*

The design and implementation of environmental education is largely based both on the will and the voluntary participation of students and teachers. In schools willing to develop environmental education activities, teachers organise preliminary discussions and meetings, primarily between themselves and afterwards with students, in order to formulate proposals for environmental education. Environmental education offices exist in each department of secondary education throughout the country. The subjects/role of these offices are:

(a) environmental student groups;
(b) environmental education networks;
(c) nomination of environmental subjects;
(d) connecting environmental knowledge and action.

In technical vocational schools there is a department for agricultural production and natural resources. This department includes the following specialisation:

(a) plant production;
(b) animal production;
(c) technology of agricultural products.

The analytical programme (curriculum) of the first year of studies includes a course entitled 'Management of natural resources – environmental protection'. During the second year the course 'Utilisation of natural resources' is taught, while the third year curriculum includes the following courses 'Management of natural resources – environmental protection' and 'Professional environment'. Furthermore, from the school year 2000-2001 onwards the course 'Organic farming issues' will be taught.

In conclusion, environmental education in high schools is provided through the activities developed by the environmental education office. In technical vocational agricultural schools it is developed both by the contribution of the environmental education office and the aforementioned courses.

4.2.7.2. *Environmental education/training in universities*

Environmental protection is nowadays dealt with in all university faculties, especially in agriculture, forestry, biology, chemistry, and engineering departments. Greek universities, along with institutes and laboratories generate 'knowledge', which is provided both to graduate and to postgraduate students.

In their research initiatives, Greek agricultural universities produce

innovative knowledge, which is passed directly to all appropriate organisations:

(a) the Ministry of Agriculture;
(b) the local public extension services of the Ministry of Agriculture;
(c) the Public Organisation for Certification and Supervision of Agricultural Products (*OPEGEP*);
(d) the Organisation for Agricultural Professional Education, Training and Employment (*OGEEKA*);
(e) industry, where it is used initially by scientific staff and afterwards transferred to the rural population through communication networks, i.e. agronomists-extensionists, agronomists-inspectors, etc.

Professors and researchers from agricultural universities participate as trainers in several training courses organised by the agricultural training centres (*KEGE*). Furthermore, they are consultants in *OPEGEP* and *OGEEKA* organisations, and attend meetings, seminars, conferences at local, national or international level, in order to channel scientific achievements into innovative knowledge and technology.

4.2.7.3. *Vocational agricultural training*

KEGE provides vocational agricultural training for those involved in agriculture – or who are going to be involved, i.e. young people - only if they wish it. They also may have already registered for programmes with an agricultural orientation or for EU framework development programmes (Directive 950/97). Vocational agricultural training is a principal criterion for participation in such programmes and, in most cases, is obligatory.

Organic farming and environmental protection are new challenges in agricultural sciences, demanding research, knowledge acquisition and knowledge diffusion. In Greek agricultural universities, organic farming does not constitute a separate department at graduate level. Knowledge of organic farming, sustainable development and environmental protection issues is generated and diffused through existing university structures. However, during the academic year 2000-2001, a new division entitled 'Sustainable rural development' was established at the postgraduate department of the School of Agriculture (Aristotle University of Thessaloniki).

4.2.7.4. *The role of certification organisations in agricultural training*

In Greece the inspection and certification of organically produced products is provided through three private institutes (*DIO*, *SOGE* and *Physiologiki*).

In addition to the inspection and certification of organic products, certification organisations are also involved in training, knowledge diffusion and information as follows:

- publication of magazines and journals for organic farming;
- organising of meetings, seminars and conferences to inform interested parties;
- publication of informational leaflets on organic farming and organic products in order to inform both farmers and consumers.

The DIO has also developed some additional activities, such as:

- publication of books on specific organic crops;
- promotion of Greek organic products both to national and international markets, by attending fairs in Greece and abroad;
- collaboration with other European certification organisations via a network;
- membership of IFOAM (International Federation of Organic Agriculture Movements).

4.2.8. **Environmental education and vocational training in Portugal**

Environmental education and vocational training in Portugal appears to have some gaps that highlight the need to strengthen the environmental curriculum. For example, teaching methods should be improved so that students become more aware of future environmental problems and issues. These problems and issues should include knowledge about agricultural products and how they are produced. Students need to be aware of the food products produced on farms that do not harm them or the environment. As future consumers, these students need to be educated concerning their consumer rights and the nutritive value of agricultural products.

4.2.8.1. *Environmental education*

A specific discipline for environmental issues and problems at the secondary level is non-existent in Portugal. This would be an incorrect indicator of the relevance of environmental education at the secondary level in Portugal, in the perspective of the Ministry of Education. The educational curriculum for environmental education has a generalist approach, integrating the concept into all disciplines offered at the secondary level. However, there are specific disciplines within the natural sciences and social sciences with greater treatment of environmental issues and problems, such as biology and geography.

The strategy for environmental education is the same for the vocational agricultural schools in which students qualify for the secondary diploma, as well as receiving professional preparation. The Ministry of Education has developed curriculum programmes for various disciplines at the secondary level. These programmes can be adapted by teachers and serve as a means to orientate them to the issues and problems related to environmental

education. The more dynamic teachers require less orientation in the integration of environmental issues and problems in their educational programmes.

4.2.8.2. *Vocational agricultural education*

Vocational agricultural education in Portugal has been established at local government level, which permits greater decision making in relating to the local agricultural sector. The schools have greater autonomy than public secondary schools in determining the types of educational programmes to develop. These schools prepare students by using the school farm for their supervised experience programmes as well as work experience with local agriculture. The schools offer a four-year curriculum in various vocational agricultural areas as well as the general secondary school diploma. The students enter in the ninth year and finish in the 12th year. As of yet, there is a limited educational programme in organic farming.

A vocational agricultural school outside of the study area has initiated educational programmes to prepare technicians in environmental areas. In one such case, the school offers the students technical training in environmental management and rural environmental tourism.

Organic farmers in Portugal do not necessarily have preparation at vocational or higher agricultural educational institutions. However, they will normally be members of organic farming associations where training and extension can assist them to understand organic farming concepts and policies. An analysis of this system has indicated the need to improve many aspects of education and training to offer better educational services to this group of farmers in Portugal.

4.2.9. **Environmental education and vocational training in Spain**

In the current education system, environmental education is included in several levels of education. That means that pre-scholar, primary, secondary, obligatory and bachelor degree education acknowledge the importance of environmental education and knowledge for the protection of the environment and the future development of social, cultural and economic activities. Furthermore, environmental education and training can contribute to more environmentally friendly attitudes and behaviour and can develop environmental consciousness.

Environmental education at university level is not provided through an integrated set of courses. However, it is included as specific units in several courses and therefore provided through the diffusion of terms and contents depending on the dimension and the specification of the university faculties.

4.2.10. Environmental education and vocational training in the Netherlands

With the growth of ecological and biological agriculture, more attention has been given to education and training. Currently, some interesting developments are taking place in this field. In order to describe them, we make a distinction between conventional vocational education in agriculture and 'alternative' education, e.g. education rooted in ecological and biological agriculture itself.

Whether biological agriculture is part of the curricula depends to a degree on personal input by teachers. An interesting recent initiative in the conventional segment is the *BIOLA*-project. This project aims to give biological education a more structured place in the curricula of conventional agricultural education. The project was drawn up in collaboration between agricultural high schools, a number of regional conventional agricultural colleges and participants of the biodynamical agricultural school of *Warmonderhof* (see below). *STOAS*, the institute for the training of teachers in agricultu. in the Netherlands, also participated in the project. Within the framework c e project, teaching materials were prepared for incorporation into conventic al curricula, teachers of conventional schools were trained, a network of teachers and other experts was set up and elements of the conventional curricula were adapted on the basis of biological principles. Currently, 13 out of a total of 75 *AOC* locations use materials from the project. It is expected that, over the coming years, a growing number of agricultural schools will incorporate modules in biological farming within their curricula.

Traditionally, the biological sector has organised most education and expertise development itself. Two institutes in particular have played, and still play, an important role in this regard; the *Warmonderhof* and the *Kraaybeekerhof*. These institutes provide complete educational programmes in biodynamic agriculture which are formally recognised by the government within the framework of the national vocational qualifications structure.

The *Warmonderhof* was established as a private initiative in 1947. Initiatives from students themselves, plus self-reliability, are strongly encouraged. Basic principals of anthroposophy are learned. Traditional subjects like biology and mathematics are taught in a more contextual and less analytical way as compared to conventional agricultural education.

The *Warmonderhof* offers daytime education programmes in biodynamic agriculture in three different disciplines: biodynamic agriculture, biodynamic horticulture and, since 1998, a separate discipline of biodynamic fruit growing. Students who are admitted, might choose between three levels of education:

(a) two-year education aiming at the professional level of 'beginning worker' in BD-agriculture;
(b) three-year education which qualifies for the level of 'self-reliant professional' in BD-agriculture;
(c) four-year education which prepares for 'management' or 'specialised professional work' in BD-agriculture.

The duration of a full daytime education is four years.

Apart from its regular programmes for daytime and part-time vocational education, *Warmonderhof* provides several training and consultancy services on a contract-basis. For instance, it supports other agricultural schools in developing their own modules in biodynamic farming, it organises courses for trainers and teachers of other schools, it organises special courses for entrepreneurs and it participates in international projects and activities for the promotion of, and expertise development in, biodynamic agriculture.

The second institute, which plays a prominent role in organic farming, is the *Kraaybeekerhof*, located in Driebergen, in the province of Gelderland. For more than 20 years the centre has organised education and training courses in the field of biodynamic agriculture and organic food. There are three educational programmes:

(a) two-year part-time training for biological dynamic agriculture, qualifying the student to the level of self-reliant worker on a biological farm;
(b) two-year part-time training for consultants in organic food;
(c) one-year part-time training for employees in organic food shops.

Because of their shorter duration, the programmes at *Kraaybeekerhof* are less general then those at *Warmonderhof*. Through their practical programme, students specialise from the beginning in arable farming, horticulture or cattle farming.

Like the *Warmonderhof*, the *Kraaybeekerhof* also offers special training courses, consultancy and promotion services. These courses have been developed at *Warmonderhof*, but they are open to students from outside and given at different locations in the Netherlands. Usually, such courses are supported by local authorities in the framework of subsidy schemes for the stimulation of conversion to biological farming.

4.2.11. **Summary**

In figures 1 to 5, education and training structures within each country are presented in order to derive general and concurrent conclusions.

Figure 4.2.2.6.1. **Environmental education and training system in Germany**

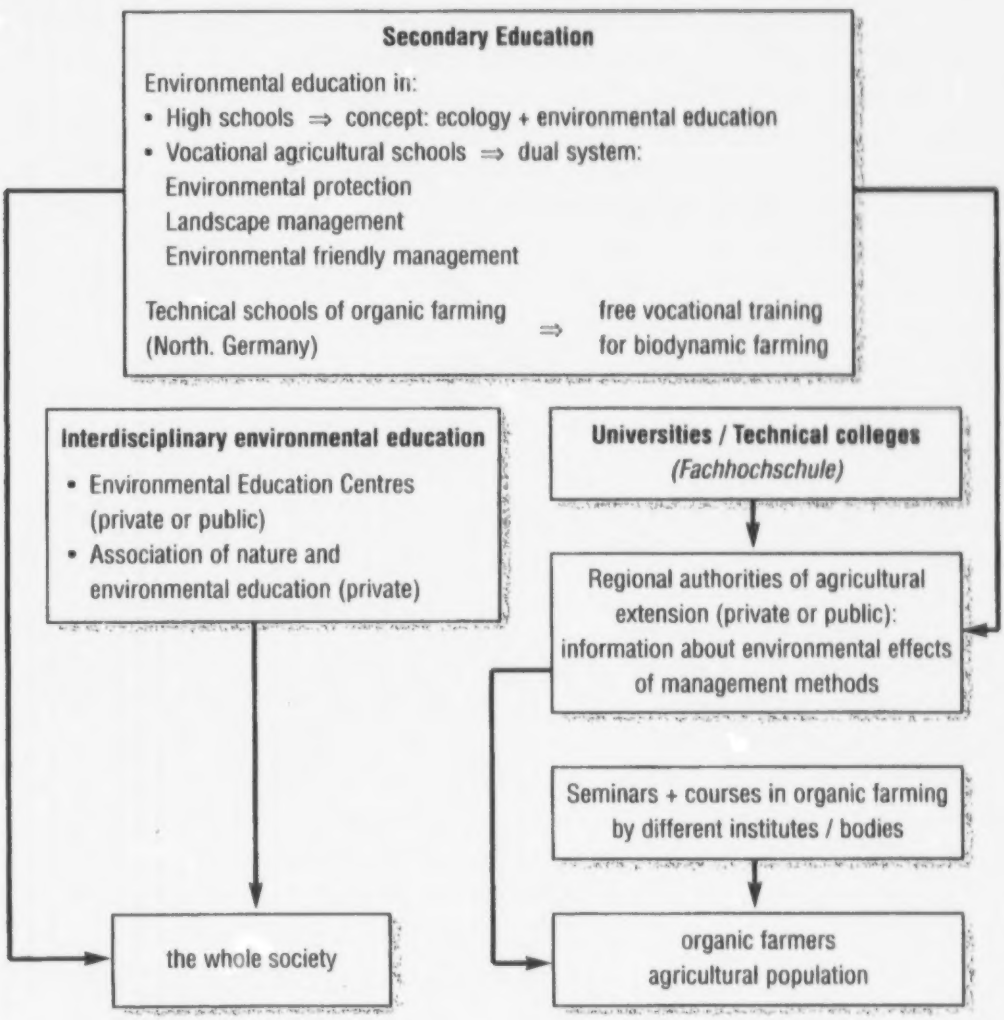

Secondary Education
Environmental education in:
• High schools ⇒ concept: ecology + environmental education
• Vocational agricultural schools ⇒ dual system:
Environmental protection
Landscape management
Environmental friendly management
Technical schools of organic farming (North. Germany)
⇒
free vocational training for biodynamic farming
Interdisciplinary environmental education
• Environmental Education Centres (private or public)
• Association of nature and environmental education (private)
Universities / Technical colleges (Fachhochschule)
Regional authorities of agricultural extension (private or public): information about environmental effects of management methods
Seminars + courses in organic farming by different institutes / bodies
the whole society
organic farmers agricultural population

Figure 4.2.2.6.2. **Environmental education and training system in Greece**

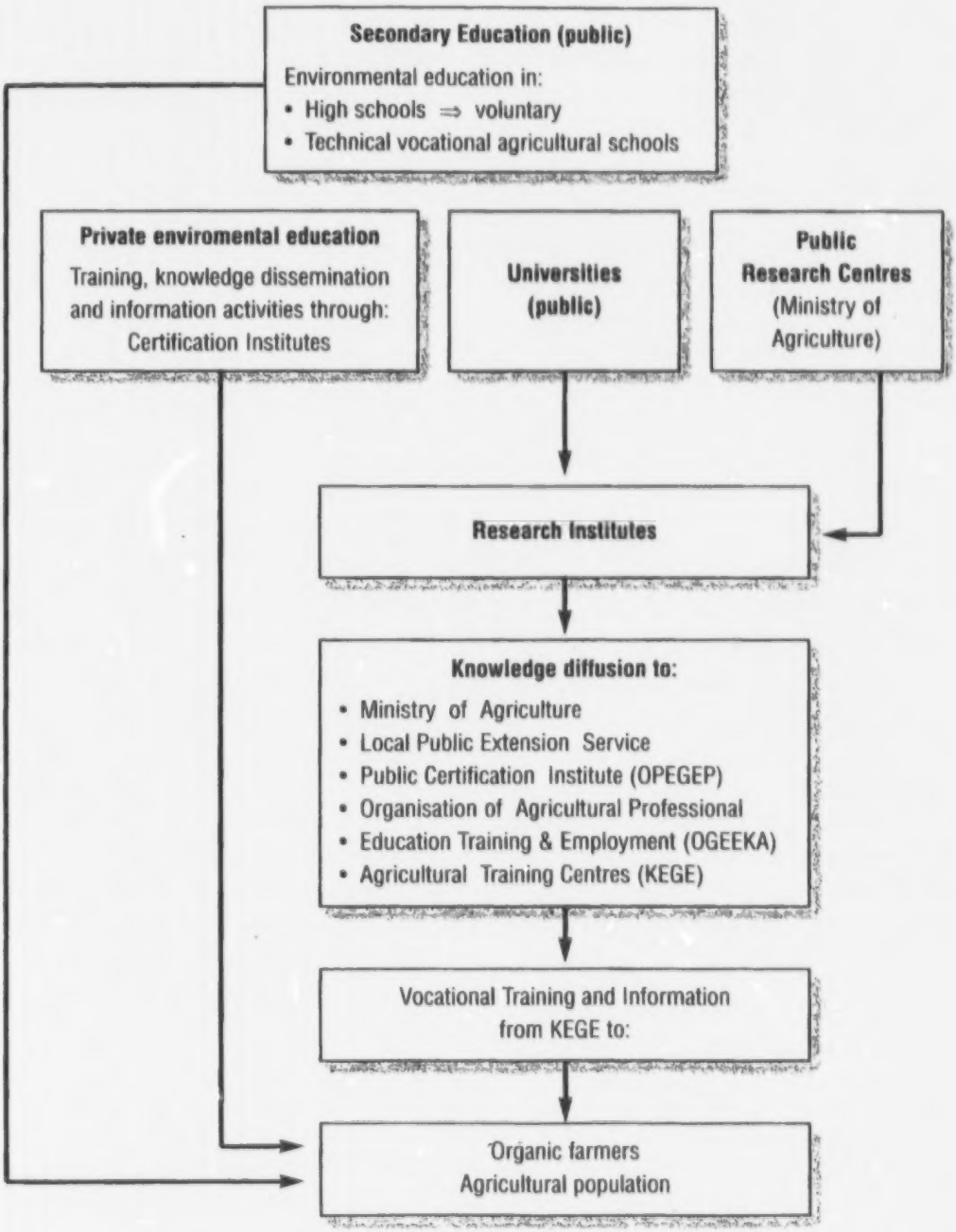
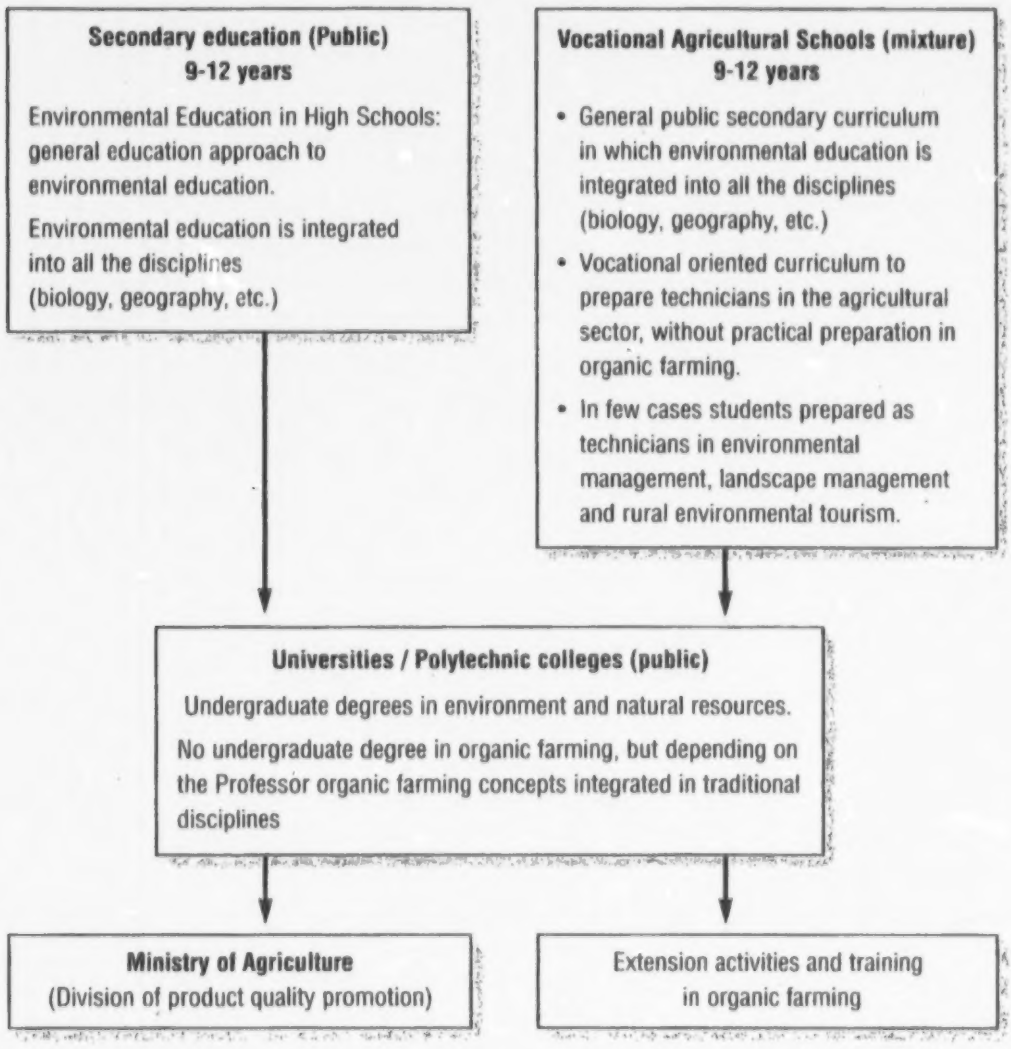
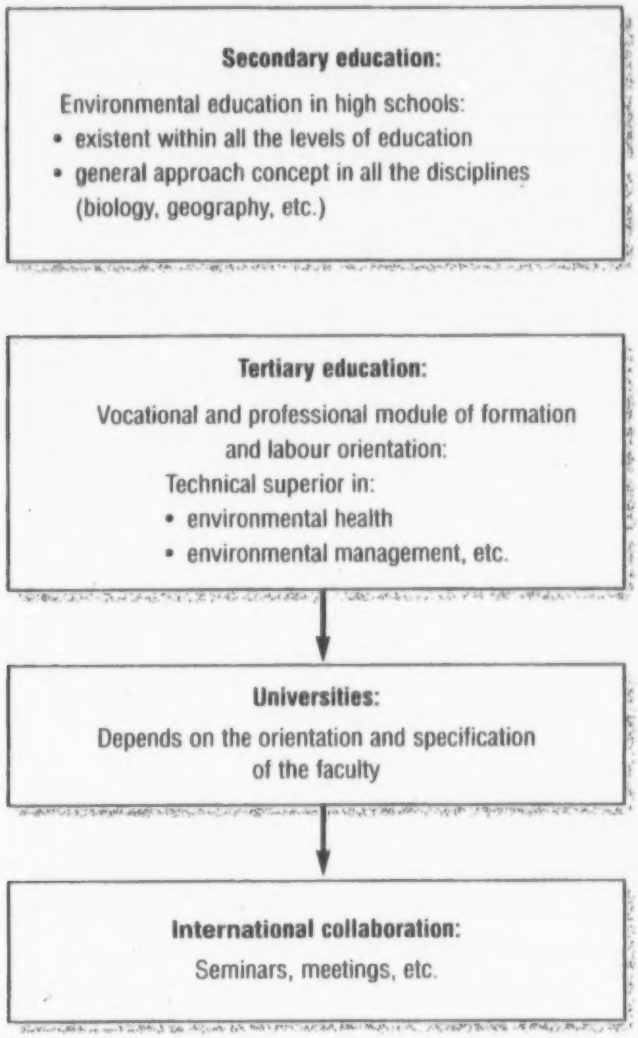

Secondary Education (public)
Environmental education in:
• High schools ⇒ voluntary
• Technical vocational agricultural schools
Private enviromental education
Training, knowledge dissemination and information activities through:
Certification Institutes
Universities (public)
Public Research Centres (Ministry of Agriculture)
Research Institutes
Knowledge diffusion to:
• Ministry of Agriculture
• Local Public Extension Service
• Public Certification Institute (OPEGEP)
• Organisation of Agricultural Professional
• Education Training & Employment (OGEEKA)
• Agricultural Training Centres (KEGE)
Vocational Training and Information from KEGE to:
Organic farmers
Agricultural population

Figure 4.2.2.6.3. **Environmental education and training in Portugal**


Secondary education (Public)
9-12 years
Environmental Education in High Schools: general education approach to environmental education.
Environmental education is integrated into all the disciplines (biology, geography, etc.)
Vocational Agricultural Schools (mixture)
9-12 years
• General public secondary curriculum in which environmental education is integrated into all the disciplines (biology, geography, etc.)
• Vocational oriented curriculum to prepare technicians in the agricultural sector, without practical preparation in organic farming.
• In few cases students prepared as technicians in environmental management, landscape management and rural environmental tourism.
Universities / Polytechnic colleges (public)
Undergraduate degrees in environment and natural resources.
No undergraduate degree in organic farming, but depending on the Professor organic farming concepts integrated in traditional disciplines
Ministry of Agriculture
(Division of product quality promotion)
Extension activities and training in organic farming

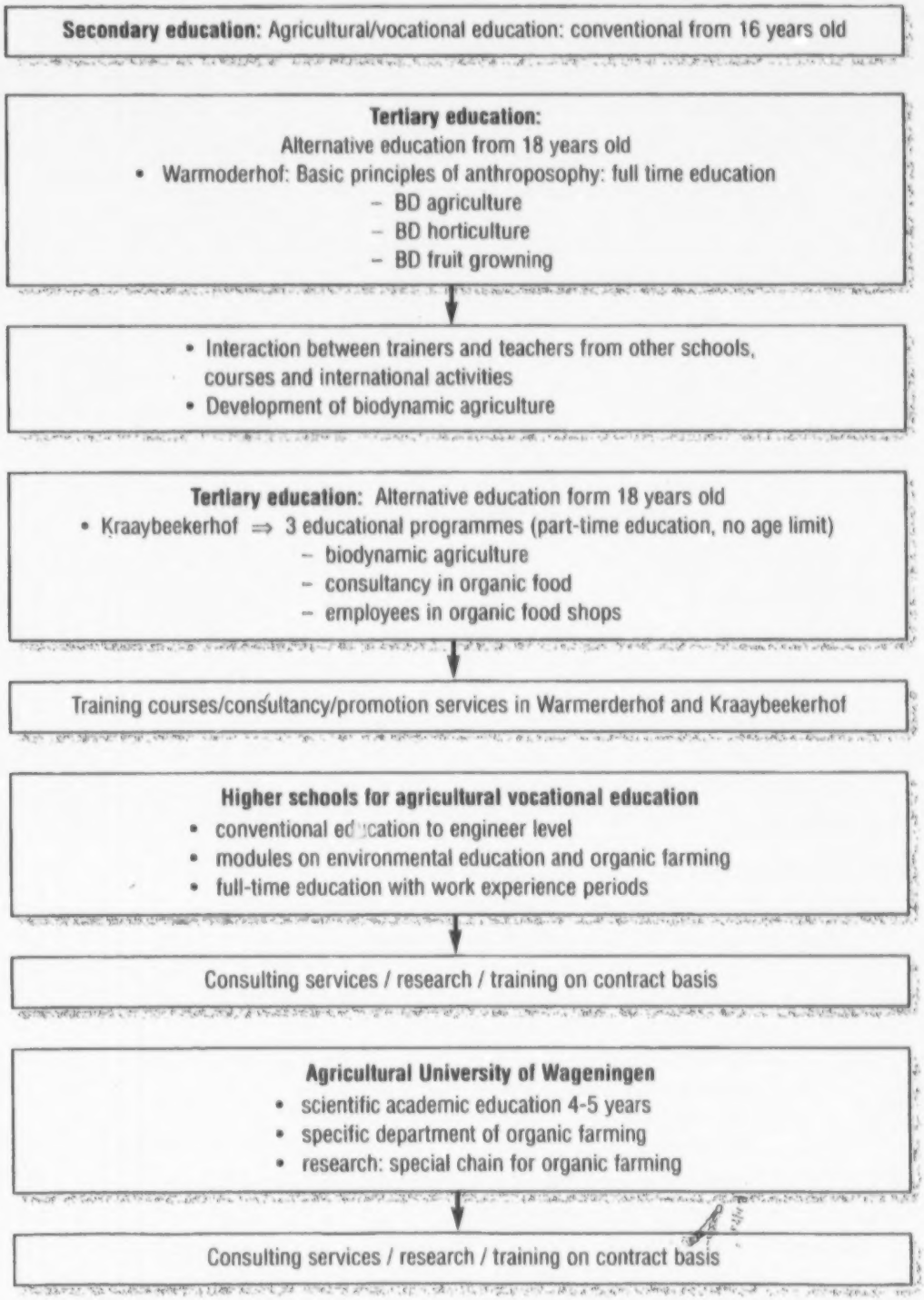
BEST COPY AVAILABLE

Figure 4.2.2.6.4. **Environmental education and training in Spain**


Secondary education:
Environmental education in high schools:
• existent within all the levels of education
• general approach concept in all the disciplines (biology, geography, etc.)
Tertiary education:
Vocational and professional module of formation and labour orientation:
Technical superior in:
• environmental health
• environmental management, etc.
Universities:
Depends on the orientation and specification of the faculty
International collaboration:
Seminars, meetings, etc.

BEST COPY AVAILABLE

Figure 4.2.2.6.5. **Environmental education and training in the Netherlands**


Secondary education: Agricultural/vocational education: conventional from 16 years old
Tertiary education:
Alternative education from 18 years old
• Warmoderhof: Basic principles of anthroposophy: full time education
– BD agriculture
– BD horticulture
– BD fruit growning
• Interaction between trainers and teachers from other schools, courses and international activities
• Development of biodynamic agriculture
Tertiary education: Alternative education form 18 years old
• Kraaybeekerhof ⇒ 3 educational programmes (part-time education, no age limit)
– biodynamic agriculture
– consultancy in organic food
– employees in organic food shops
Training courses/consultancy/promotion services in Warmerderhof and Kraaybeekerhof
Higher schools for agricultural vocational education
• conventional education to engineer level
• modules on environmental education and organic farming
• full-time education with work experience periods
Consulting services / research / training on contract basis
Agricultural University of Wageningen
• scientific academic education 4-5 years
• specific department of organic farming
• research: special chain for organic farming
Consulting services / research / training on contract basis

BEST COPY AVAILABLE

From the figures it is possible to draw the following conclusions.

Environmental education, training and vocational training in the sector of organic farming and organically produced products in Portugal, Spain and Greece (southern EU countries) are still at an initial stage of implementation:

(a) in secondary education, environmental education is voluntary or included within more general courses (biology, geography, etc.);
(b) universities provide research and the results and knowledge are disseminated.

However, knowledge is not always based on a distinct system (frame), and in Greece, private certification institutes have an important role in knowledge and information dissemination, especially among organic farmers, inspectors, retailers, and consumers.

In Germany and the Netherlands, environmental education systems and structures are apparent (which mainly developed during the 1970s either on a private or on a public basis), as well as organised training, vocational training, information, and consultancy. These structures exist not only among the people involved in organic farming, but also in society as a whole. Educational systems in vocational agricultural training have developed which, either at school level (full time, dual system), or on a part-time basis, produce professionals, with specific skills in organic farming and sustainability. These educational systems also develop activities relevant to supplementary training for teachers, trainers and for all those involved in the process of organic farming.

4.3. Innovation transfer

The dissemination of innovation in organic farming and its products, from their source to various categories within the chain - farmer, agronomist-extensionist, agronomist-teacher, retailer, consumer - is presented in the following sections:

4.3.1. **Innovation transfer in Germany**

Innovation sources in organic farming in Germany comprise:

- farmers' experience and practice experimentation;
- research findings either from research institutes and unions or from universities.

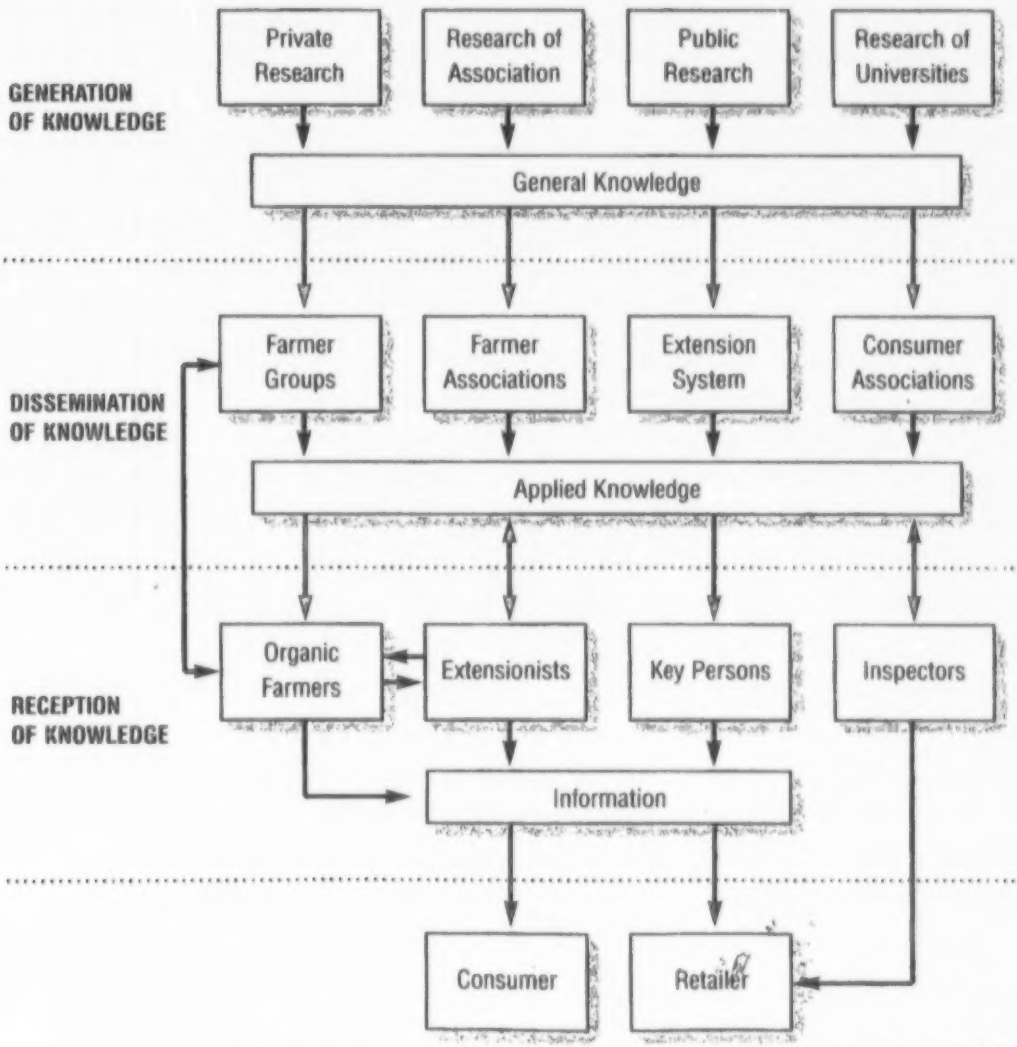
The inspection, evaluation and dissemination of the findings regarding new products, new practices or production methods take place at the local level progressively within local unions of organic farmers. The elements mentioned above are organised mainly by organic farming unions.

The procedure for accepting and implementing the innovation is achieved in two ways:

- the inspection of the innovation taking into account the local conditions and the evaluation of the pilot implementation of the innovation in the specific area;
- the adoption of the innovation and the inspection of its proper implementation according to the principles of organic farming, as well as the incorporation of the innovation in the work activities of the agricultural enterprise.

Therefore, organic farming unions and local unions of farmers have a deterministic role in the diffusion of innovation.

Figure 4.3.1.1. **Organic farming innovation transfer in Germany**



BEST COPY AVAILABLE

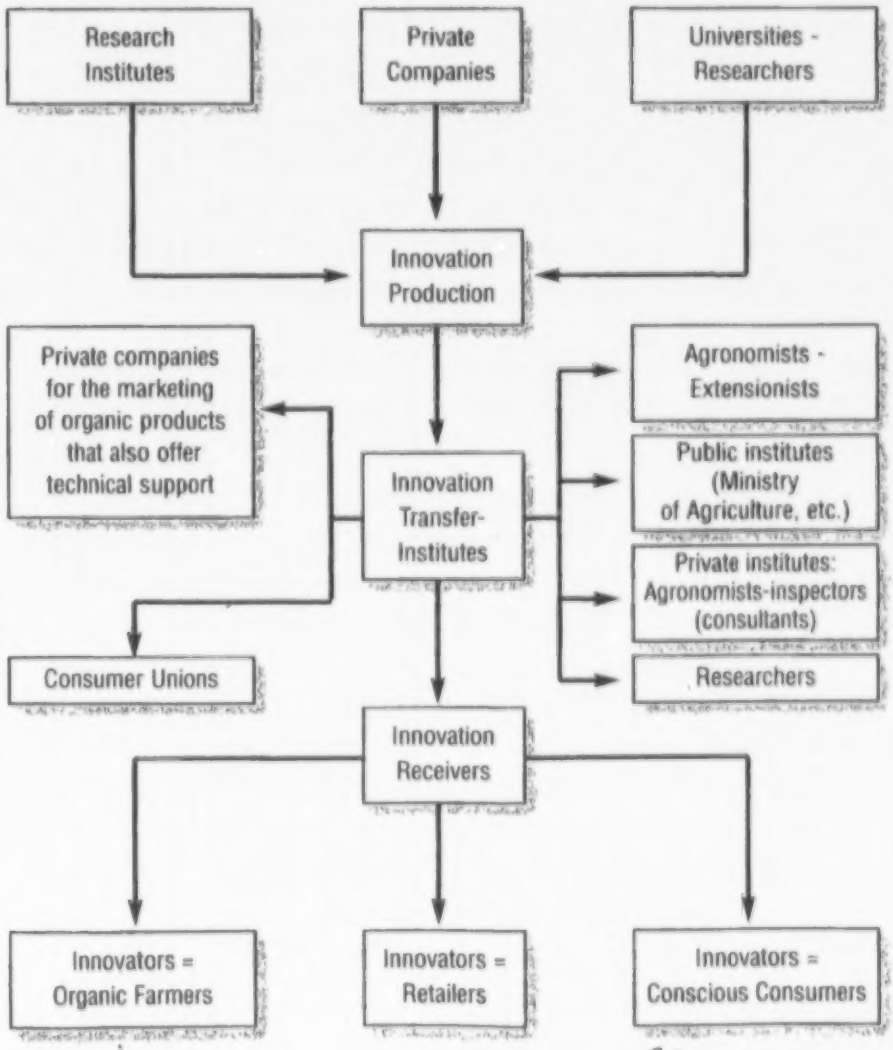
4.3.2. **Innovation transfer in Greece**

Innovation sources in organic farming in Greece originate from research findings from research institutes, private companies and universities.

The dissemination of the findings regarding innovation products, practices and production methods is provided through the public services of the Ministry of Agriculture (agronomists - extensionists), agricultural training centres, inspectors from private organisations, and through researchers and consumer unions.

The recipients of innovation products regarding organic farming, processing and distribution are organic farmers, retailers and consumers.

Figure 4.3.2.1. **Organic farming innovation transfer in Greece**

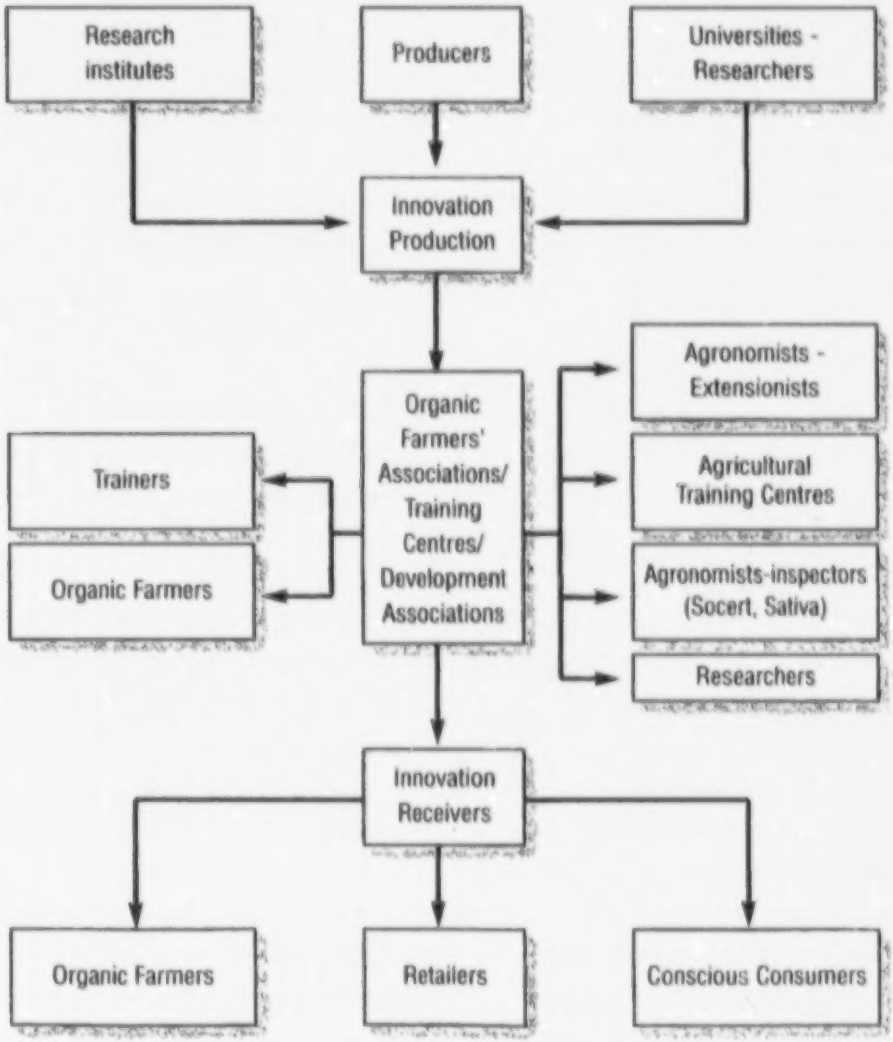


BEST COPY AVAILABLE

4.3.3. **Innovation transfer in Portugal**

Institutional efforts to produce innovation in organic farming are quite scarce, conducted either by (isolated) Agriculture Ministry technicians at local level, or by one of the few universities involved in this field. *Agrobio* has stimulated experimentation and has worked with producers and some research units, for example on organic production of olives. The producers themselves have conducted small experiments as well. Organic farming methods are spread through training activities promoted by organic farmers' associations, development associations or training centres.

Figure 4.3.3.1. **Organic farming innovation transfer in Portugal**

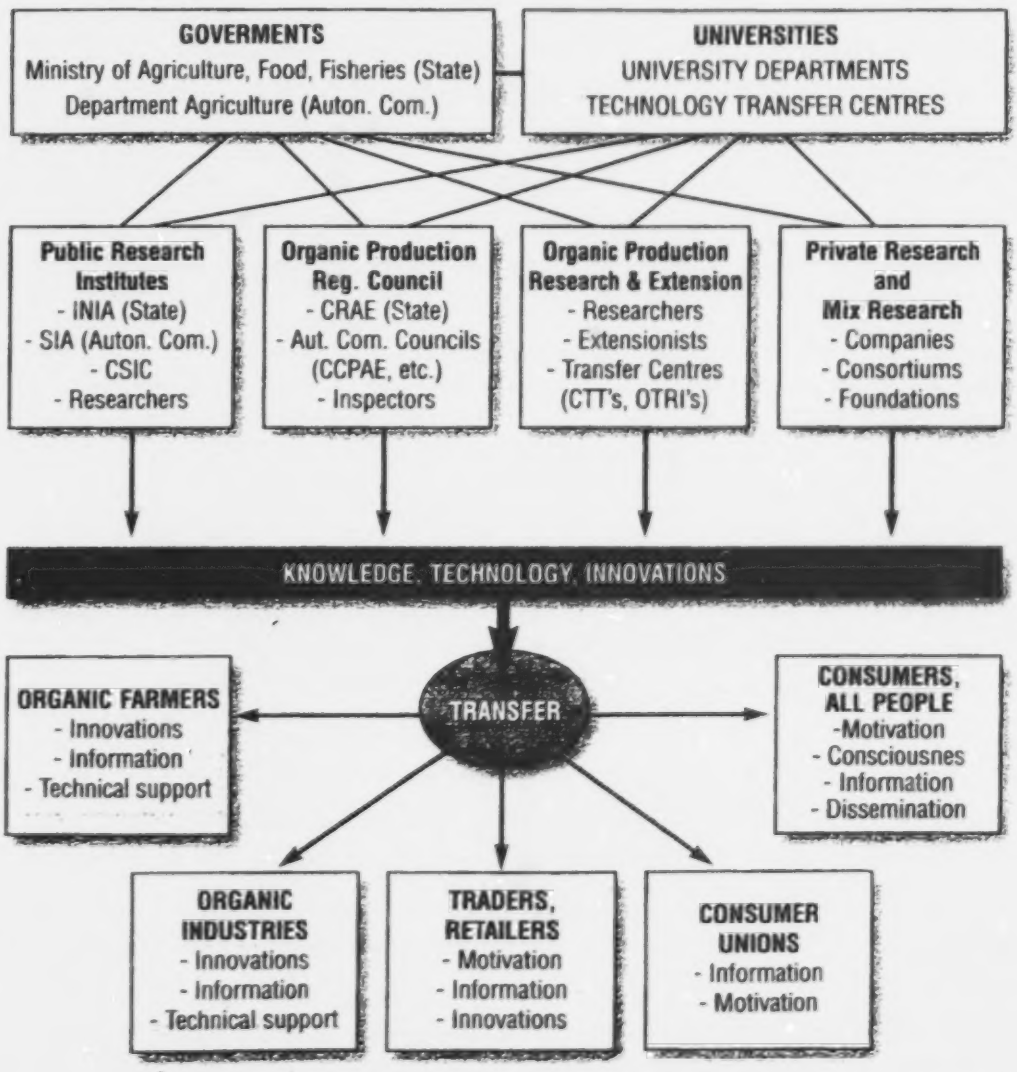


BEST COPY AVAILABLE

4.3.4. Innovation transfer in Spain

Innovation in organic farming in Spain is conducted either by the Ministry of Agriculture Services, or by the universities involved in this field. More precisely, innovation originates from public and private research institutes, the Organic Production Regulation Council and the Organic Production Research and Extension Service. The role of the above bodies is of major importance, taking into account that they are also responsible for the dissemination of their findings regarding new farming methods and techniques. The dissemination process concerns not only organic farmers but also the industry, distribution companies, retailers, and consumers.

Figure 4.3.4.1. **Organic farming innovation transfer in Spain**



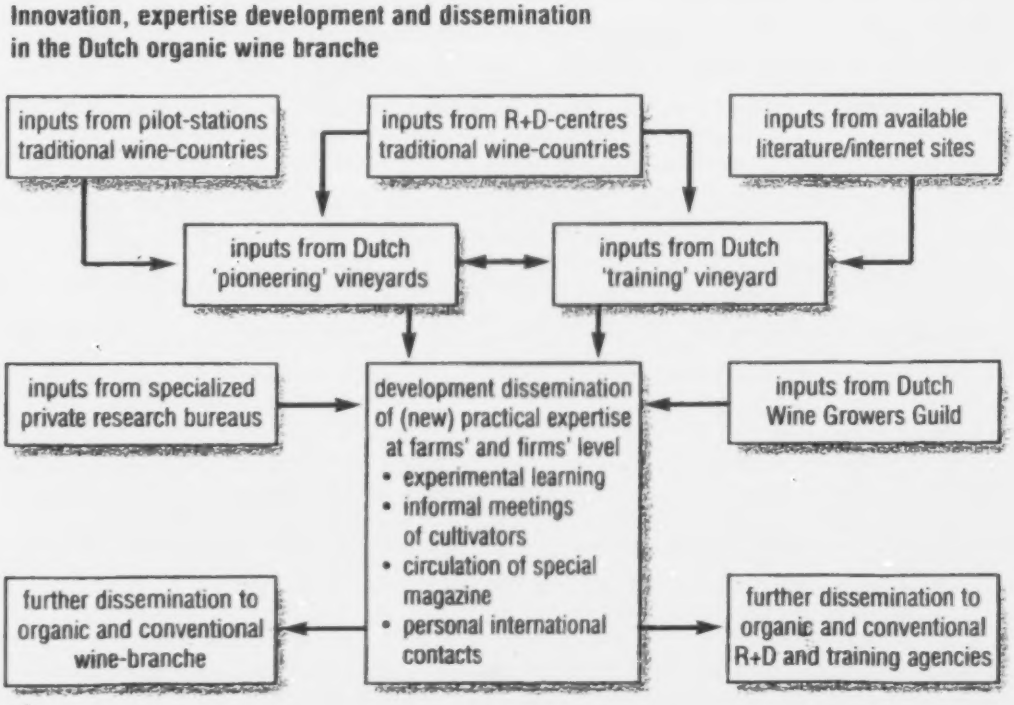
BEST COPY AVAILABLE

4.3.5. **Innovation transfer in the Netherlands**

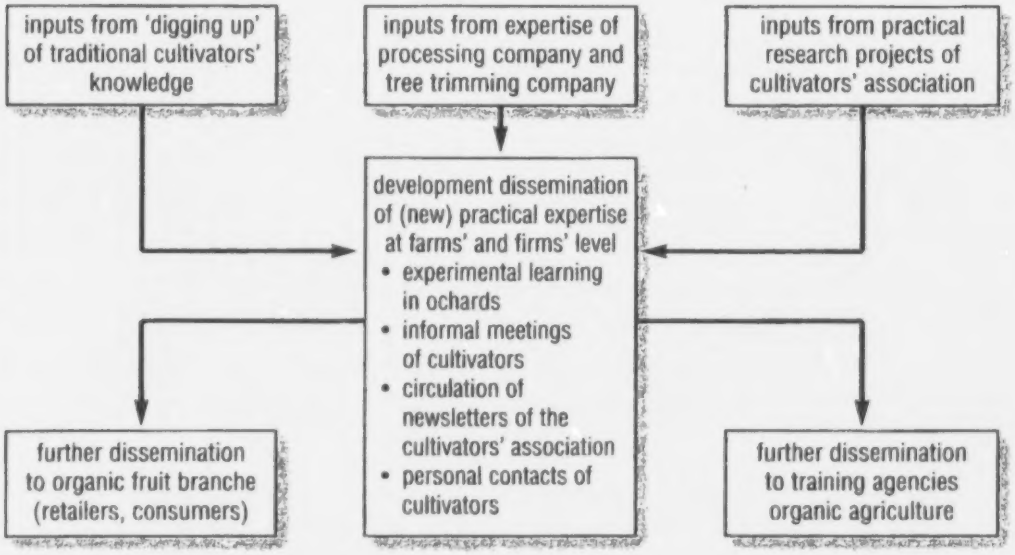
The production and transfer of innovation regarding organic farming in the Netherlands depends upon the product, differing between the wine sector and the fruit sectors. Innovation in the wine sector mainly originates through pilot stations, research and development centres, and exchanges at international level, as well as through pioneer organic farmers and private research centres. The transfer process is conducted with informal meetings of cultivators, experimental learning and personal international contacts.

Innovation in the organic fruit juice sector varies between the two areas under study; Rivierenland and Wadden. In the Rivierenland area, traditional cultivators, experts from processing and trimming companies, and practical research projects conducted by farmers' associations are all part of the process. In the Wadden area, cooperatives play an important role both in the production and the transfer of innovation. Their sources of information are international exchanges, literature, personal contacts and external consultants. In addition, private research and development institutes, agricultural schools and inspection organisations are involved in the innovation process. Dissemination of innovation to farmers is provided through experimental learning at farms and processing companies, cultivation manuals, magazines and study groups.

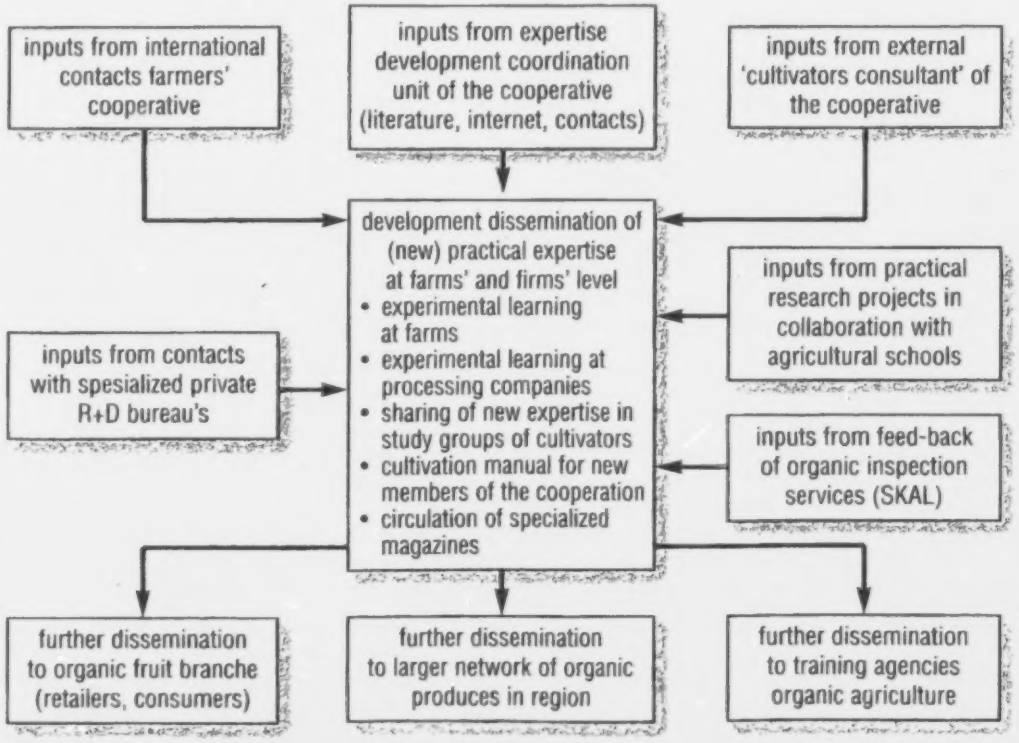
Figure 4.3.5.1. **Organic farming innovation transfer in the Netherlands**


Innovation, expertise development and dissemination in the Dutch organic wine branche
inputs from pilot-stations traditional wine-countries
inputs from R+D-centres traditional wine-countries
inputs from available literature/internet sites
inputs from Dutch 'pioneering' vineyards
inputs from Dutch 'training' vineyard
inputs from specialized private research bureaus
development dissemination of (new) practical expertise at farms' and firms' level
• experimental learning
• informal meetings of cultivators
• circulation of special magazine
• personal international contacts
inputs from Dutch Wine Growers Guild
further dissemination to organic and conventional wine-branche
further dissemination to organic and conventional R+D and training agencies

Rivierenland-area: innovation, expertise, development and dissemination in the organic fruit (juice) branche


inputs from 'digging up' of traditional cultivators' knowledge
inputs from expertise of processing company and tree trimming company
inputs from practical research projects of cultivators' association
development dissemination of (new) practical expertise at farms' and firms' level
• experimental learning in ochards
• informal meetings of cultivators
• circulation of newsletters of the cultivators' association
• personal contacts of cultivators
further dissemination to organic fruit branche (retailers, consumers)
further dissemination to training agencies organic agriculture

Wadden-area: innovation, expertise, development and dissemination in the organic fruit (juice) branche


inputs from international contacts farmers' cooperative
inputs from expertise development coordination unit of the cooperative (literature, internet, contacts)
inputs from external 'cultivators consultant' of the cooperative
development dissemination of (new) practical expertise at farms' and firms' level
• experimental learning at farms
• experimental learning at processing companies
• sharing of new expertise in study groups of cultivators
• cultivation manual for new members of the cooperation
• circulation of specialized magazines
inputs from practical research projects in collaboration with agricultural schools
inputs from contacts with spesialized private R+D bureau's
inputs from feed-back of organic inspection services (SKAL)
further dissemination to organic fruit branche (retailers, consumers)
further dissemination to larger network of organic produces in region
further dissemination to training agencies organic agriculture

CHAPTER 5

Processing, distribution and consumer information for organic products

5.1. Work organisational principles

A brief presentation and description of processing methods for the surveyed organic products (wine, olive oil and fruit juice) is critical in order to clarify the role of processing for certified organically produced products.

5.1.1. **Description of wine production**

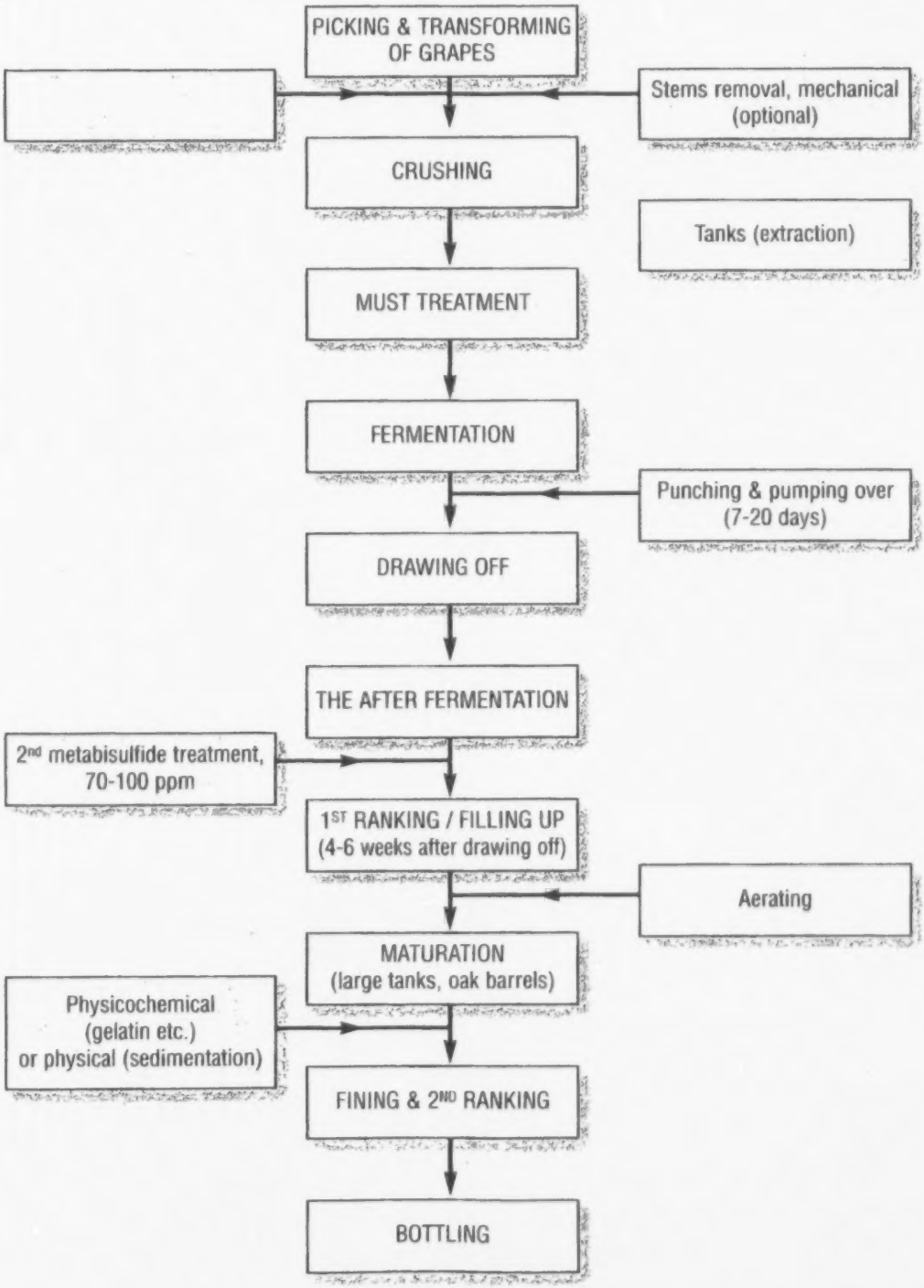
Wine making methodology is similar regardless of the origin of grapes, with those cultivated under organic or conventional farming being given the same treatment in production. The fact that there is organic wine derives from cultivation in organic vineyards. There are also special aspects to production, such as the use of very good quality raw material, or pasteurisation instead of metabisulfide treatment.

Red wines are fermented including the skins in order to extract the pigments located in the skins The colour, aroma and taste of the wine varies according to the duration of fermentation (7-20 days). Rose or pink wines are produced either by fermenting pink varieties of grapes in their skins or by using red grapes and separating the juice from the skins early in the fermentation, usually within 24-36 hours.

White wines differ fundamentally from red wines in production, composition and sensory quality. They are produced by fermentation without skins, resulting in low tannin and other colouring substances. White wines are usually more delicate in flavour than red wines and defects in taste and appearance are more apparent in them. White grapes are usually fermented in covered tanks, the fermentation is being allowed to complete in the tank. Clarification and bottling may take place in 6-24 months.

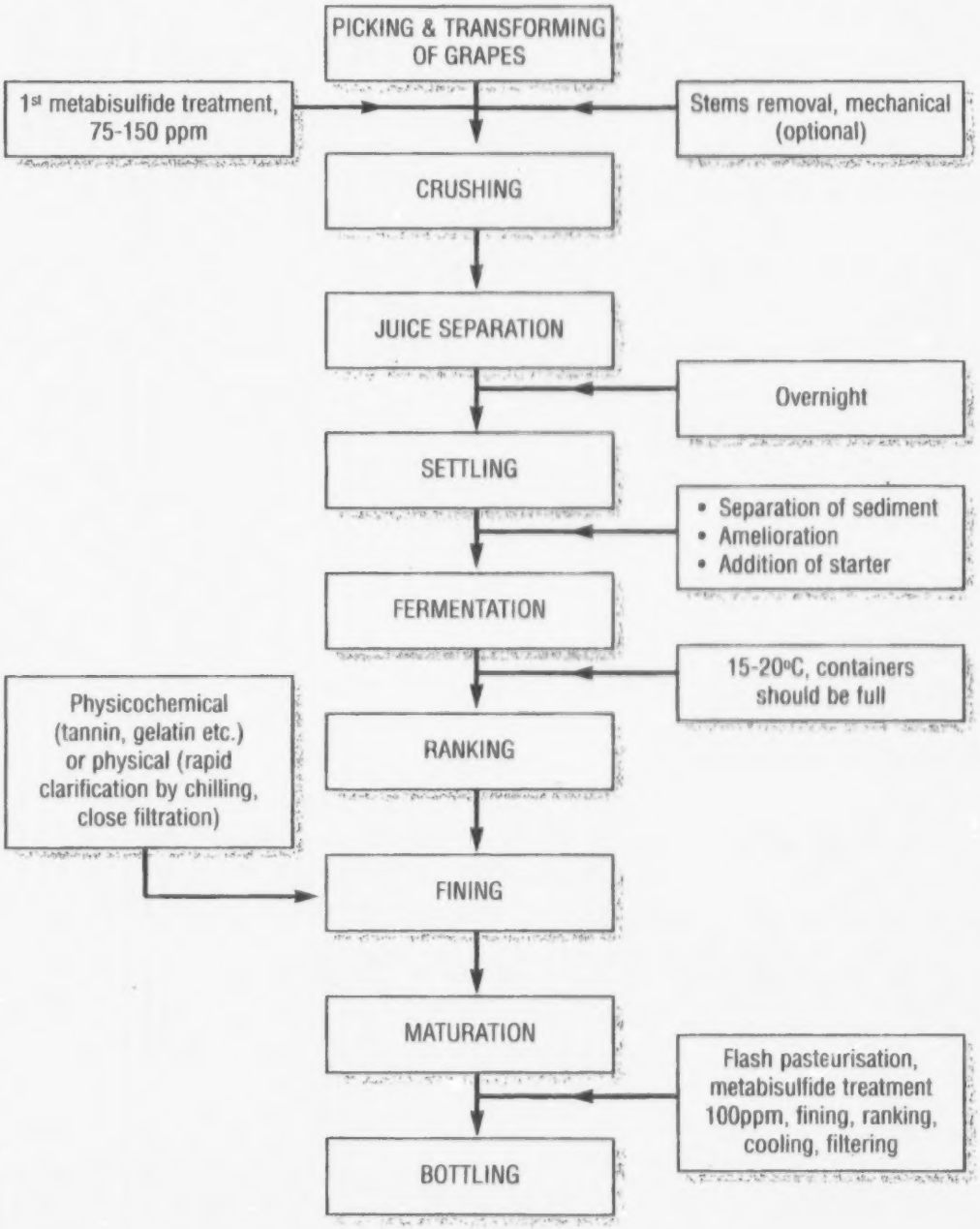
An outline of red and white wine production is presented in Figure 5.1.1.1 and Figure 5.1.1.2 respectively (Amerine, A., *et al*, 1967).

Figure 5.1.1.1. **Diagram of the production of red table wine**



BEST COPY AVAILABLE

Figure 5.1.1.2. **Diagram of the production of white table wine**



BEST COPY AVAILABLE

5.1.2. **Description of olive oil production**

Virgin olive oil has two basic characteristics that distinguish it from other vegetable oils and make it more highly prized:

(a) it is obtained from a fruit, meaning that the oil is a natural product;
(b) it is edible immediately after extraction if the raw material is of good quality, because the oil is extracted from the olives by purely mechanical means.

Olive oil comes in different grades. According to EC Council Regulation No. 356/92, 1992, olive oil classification includes the following grades:

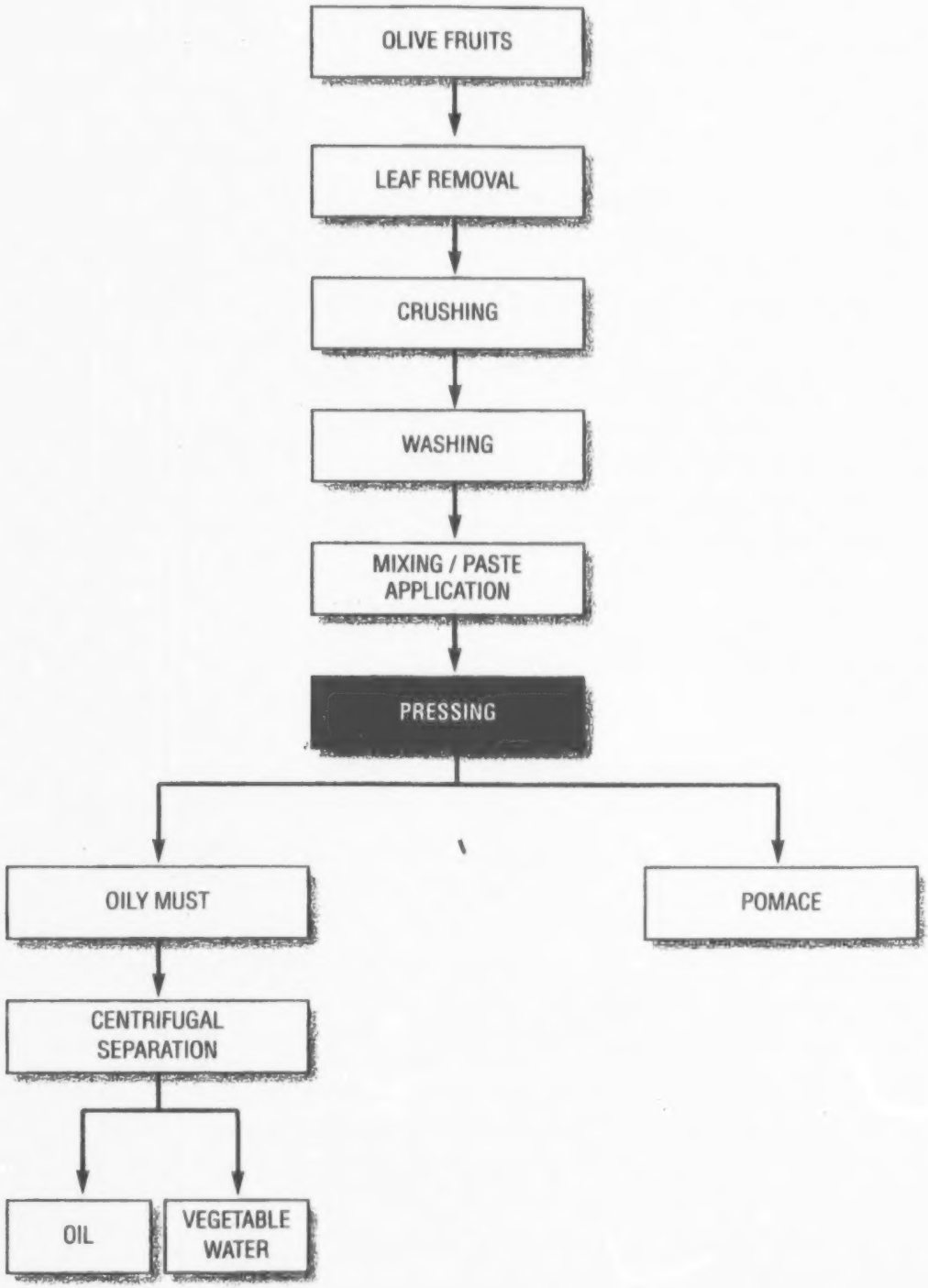
(a) virgin olive oil;
(b) extra virgin olive oil;
(c) fine virgin olive oil;
(d) semi-fine virgin olive oil;
(e) refined olive oil;
(f) olive oil;
(g) olive pomace oil.

Virgin olive oil qualities (a to d) are obtained from olive fruits by mechanical means. Olive oil quality grades (e to g) are obtained by technical treatment of pomace, such as deacidification, bleaching or decolorisation.

Virgin olive oil is extracted from olives using one of three systems: pressure, centrifugation, or percolation. A diagram of each procedure is presented in Figures 5.1.2.1, 5.1.2.2 and 5.1.2.3 (Boskou, D., 1997, and Kyritsakis, A., 1993). Briefly, the olive processing/extraction includes the following steps:

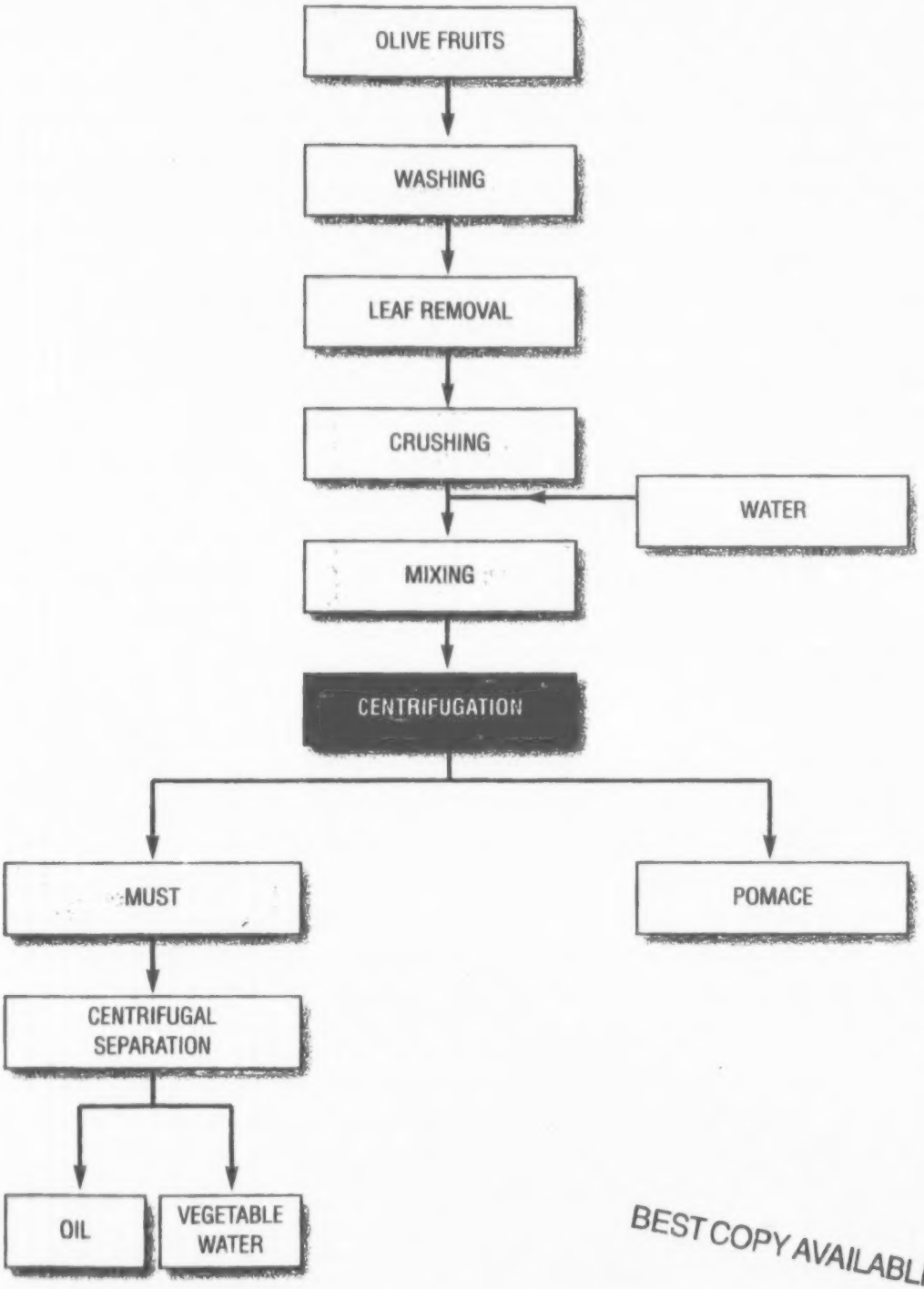
- leaf removal and washing;
- crushing;
- mixing olive oil extraction systems.

Figure 5.1.2.1. **Diagram of olive oil extraction by pressure (A)**



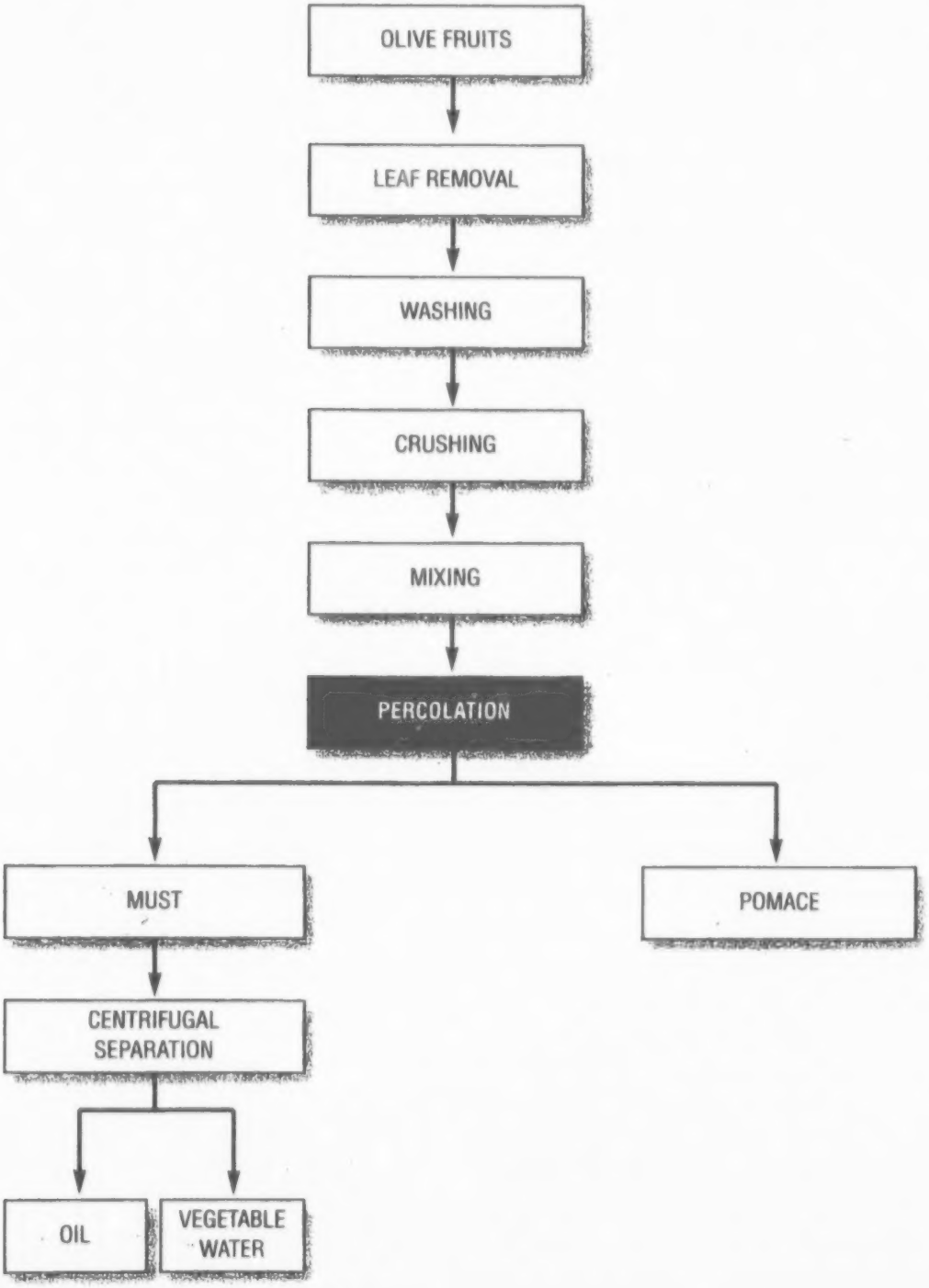
BEST COPY AVAILABLE

Figure 5.1.2.2. **Diagram of olive oil extraction by centrifugation (B)**



BEST COPY AVAILABLE

Figure 5.1.2.3. **Diagram of olive oil extraction by percolation (C)**



BEST COPY AVAILABLE

The system used to process the olives affects the quality of the oil and the aroma. The centrifugation system requires water at 20-30oC to be added to the olive paste to facilitate the separation of oil from the other phases while pressure and percolation do not need any water. This results in differences in some characteristics of the oil. Experimental data show that significant differences are observed in the content of natural antioxidants and chlorophyll pigments and the induction time. Antioxidants (polyphenols) are soluble in water and can be removed with the water added during the extraction of oil with centrifugation, while the induction time that is correlated to the resistance to autoxidation, is shorter. Also, the content of chlorophyll pigments is higher in the oil obtained by means of centrifugation since, with this system, a metallic olive crusher is used for olive grinding, and thus more chlorophyll is released. In contrast, there are no significant differences in free acidity, the peroxide value and spectrophotometric absorption in the UV region.

It is worth noting that oil extracted by means of a pressure system, contains higher amounts of substances responsible for organoleptic defects of oils. Oil extracted by percolation retains its natural quality attributes intact, particularly its polyphenols content. Since extraction takes place at ambient temperature, no water is added and there is no possibility of contamination.

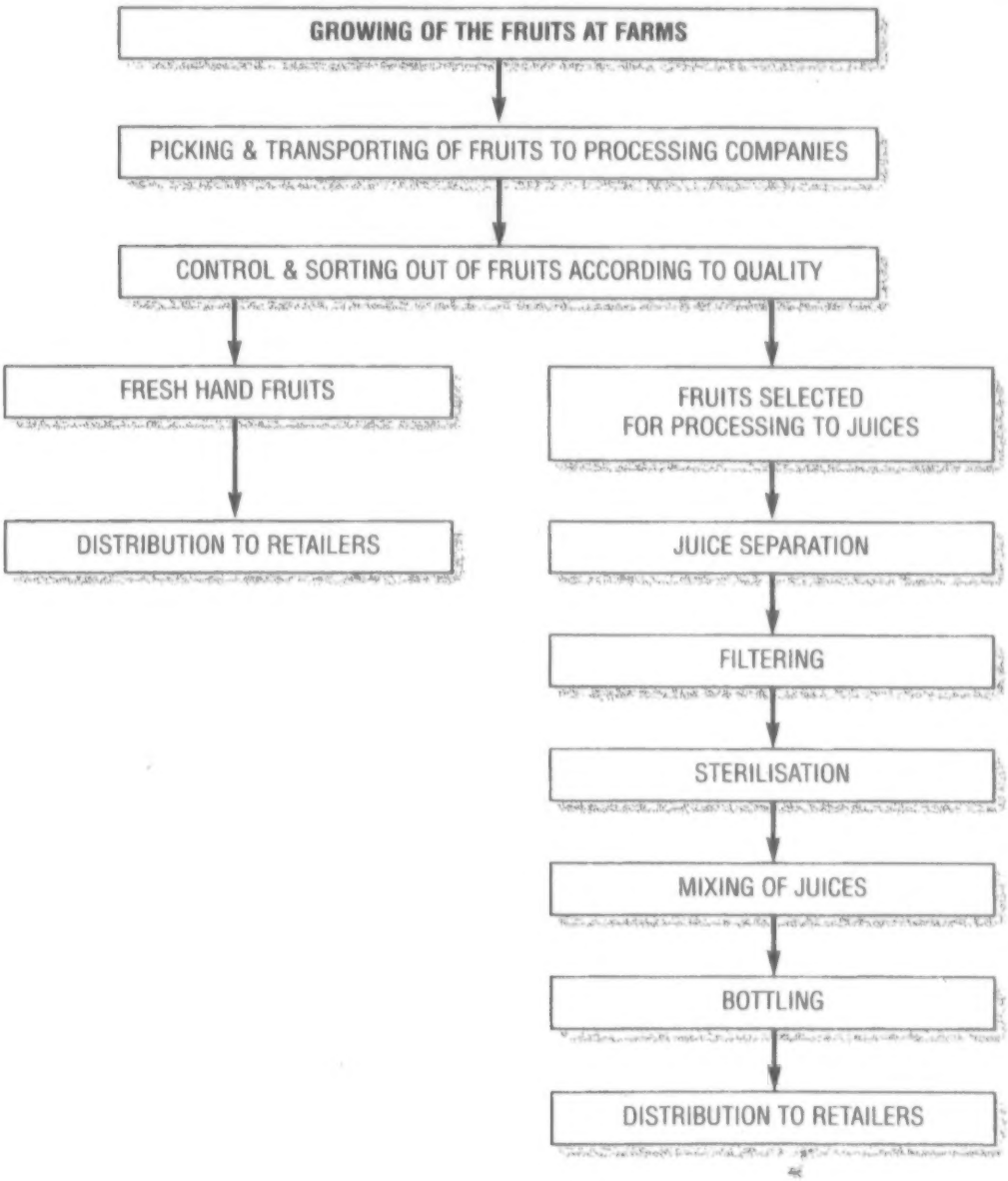
5.1.3. **Description of fruit juice production**

Figure 5.1.3 illustrates the production process for fruit juices as observed at the organic fruit farms and processing companies in the Dutch cases. In the regions investigated the fruits are cultivated on small-scale farms according to biological principles. They are harvested during the season, following natural ripening processes and according to specific harvesting schemes, which protect the fruit trees and brushes from specific diseases and which assure an adequate further growth and development of the trees and brushes. After the harvest, the fruits are transported to specialised organic processing companies.

An important step takes place when the fruits enter these companies. They are controlled and sorted out according to quality. Fruit of higher quality is distributed directly to the organic retailers to be sold as fresh to consumers. Fruit with a lesser (visual) quality is processed further to different fruit products. Fruit juices are only one type of product made in the processing companies. The first step in juice production is the selection of fruits for juices. Certain basic standards (ripeness, taste) are required for juice production. Fruits which do not meet these standards are not used for juices but for other products, or they are given back to farmers to be used, for example, as food for animals. The next step in juice production is the

separation of the juice, which is done through pressing. After the juice has been separated, it is filtered and sterilised in order to clear it up and remove harmful microorganisms. A next step might be the mixing of different juices, to get different types of juice products, different tastes, different colours etc. Finally, the juices are bottled and distributed to retailers and other selling points for the products.

Figure 5.1.3. **Diagram of fruit juice production**



Typical of organic fruit juice production in the regions investigated is its small-scale character and its traditional way of operating. Mechanical devices are only used to a limited degree (pressing tools, sterilisation equipment, small bottling machines) and much of the work is done by hand by the employees themselves. Usually, the processing companies also have a storage function. Some of them have cooling facilities available. However, because of the low durability of the organic fruit products (no conservation chemicals are added), most products are transported directly to the selling points.

5.2. Distribution of organic products

'Food marketing is the set of economic activities, which take place from the time the products are harvested from the producer, until the time products are received by consumers, as well as the orientation of agricultural production towards products that are preferred by consumers' (Kamenidis, 1995). The objectives of the marketing of agricultural products are the maximisation of sales and the maximisation of total income.

The distribution of organically produced products appears to be difficult, since profit margins for large food companies are rather narrow. Retail markets for organic products within the EU vary between countries. Research has shown that different levels of market development are found in relation to prices, availability, transparency, and quality. In many cases, organically produced products compete unsuccessfully with their conventional counterparts (Foti, 2000). Therefore, future marketing strategies should focus on these sectors. An increase in market share of organic products could be achieved with the following:

(a) price strategy - prices should be reduced, in order for organic products to be preferred by lower social classes. In recent years consumers have demonstrated a 'value for money' approach in food purchases, therefore a re-evaluation of price level is critical in order for the demand for these products to be further increased;
(b) education/information - the market for organic products has been developed without specific promotional campaigns (Lampkin, 1990). If supply increases and consumers accept the prices, education and information provision can contribute to the increase in demand: the majority of consumers have not realised the additional cost organic farming methods require, or are not informed about the actual difficulties the implementation of organic farming practices may have;
(c) cooperative marketing - the involvement of agricultural cooperatives in the marketing of organic products, offers producers the opportunity to

ensure sufficient product supply, to provide a larger variety of products, to strengthen their negotiating situation, and finally to share the cost of marketing;

(d) presentation of organic products in supermarkets and hypermarkets - proper presentation and positioning can allow organic products to be differentiated from conventional ones for reasons other than price. The 'shop-in-shop' system, according to which organic products are exhibited on separate shelves, contribute to consumer preference, since the product is not directly compared (in price and appearance) with its conventional counterpart.

Generally, the marketing of organic products requires appropriate distribution channels. At international level, organic products are mainly promoted through wholesalers to hypermarkets.

In order for organic products to be distinguishable by consumers and, simultaneously, for EU organic farmers to be supported, the European Commission (General Directorate for Agriculture, 2000) authorised a 'European logo' for organic farming (Reg. 331/2000).

Table 5.2. **Market share of major distribution channels of organic products % (1997/98)**

Distribution ▶ Country ▼	Food retail	Hygiene and organic shops	Directly to consumers	Others
Austria	73	9	18	0
Belgium	23	55	7	5
Denmark	90	2	8	0
Finland	89	5	5	1
France	38	46	16	0
Germany	26	46	19	9
Greece	5	65	30	0
Ireland	–	–	–	–
Italy	23	60	17	0
Luxemb.	40	28	28	4
Netherlands	2	96	1	1
Portugal	91	1	3	5
Spain	29	49	22	0
Sweden	91	0	7	2
UK	74	15	6	5

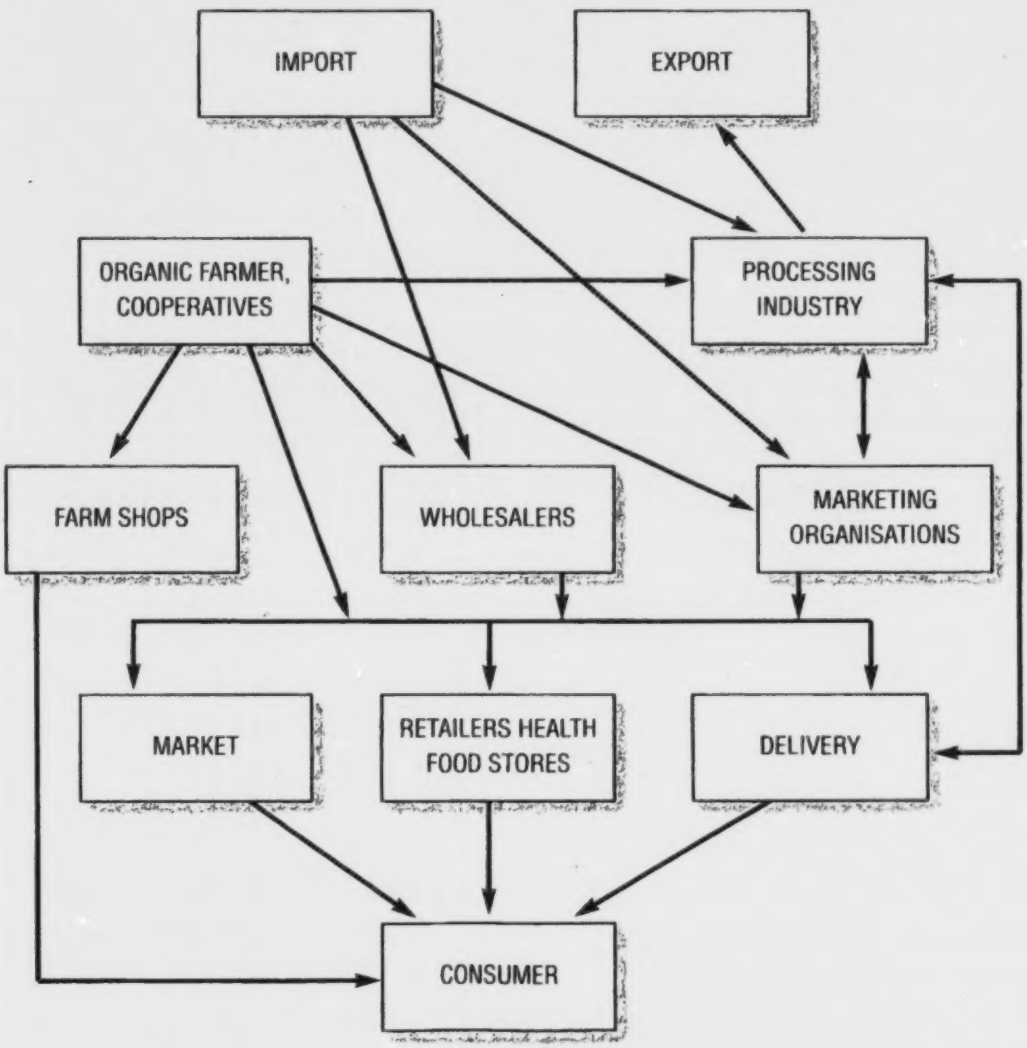
Source: Hamm, Ulrich und Johannes Michelsen: *Die Vermarktung von Öko-Lebensmitteln in Europa, Ökologie & Landbau, Heft 113, 2000*

BEST COPY AVAILABLE

Distribution of organic products at European level varies from one country to another. For example, in the Netherlands the distribution of organic products is provided directly from hygiene and organic food shops, whereas in Portugal food retailers handle the whole quantities of organic foods. The following table presents distribution and the major marketing channels of organic products in each EU country.

Finally, supply chains for organically produced products within the five countries are presented, in order to give a global view of the similarities and differences among the five countries in the production – marketing/ distribution – consumption chain.

Figure 5.2.1. **Supply chain of organic products in Germany**



BEST COPY AVAILABLE

Figure 5.2.2. **Supply chain of organic products in Greece**

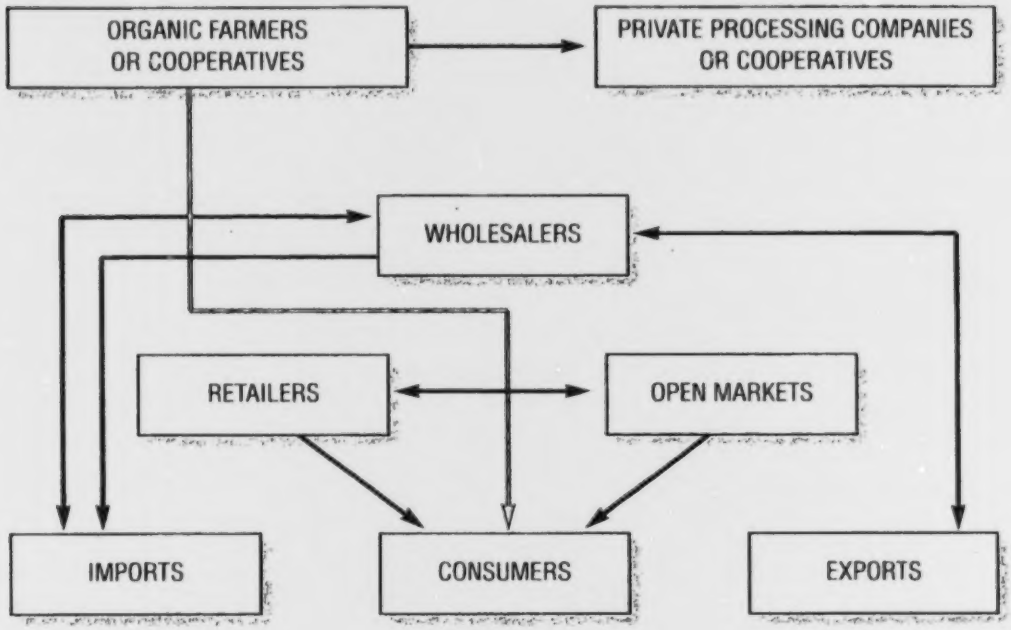


Figure 5.2.3. **Supply chain of organic products in Portugal**

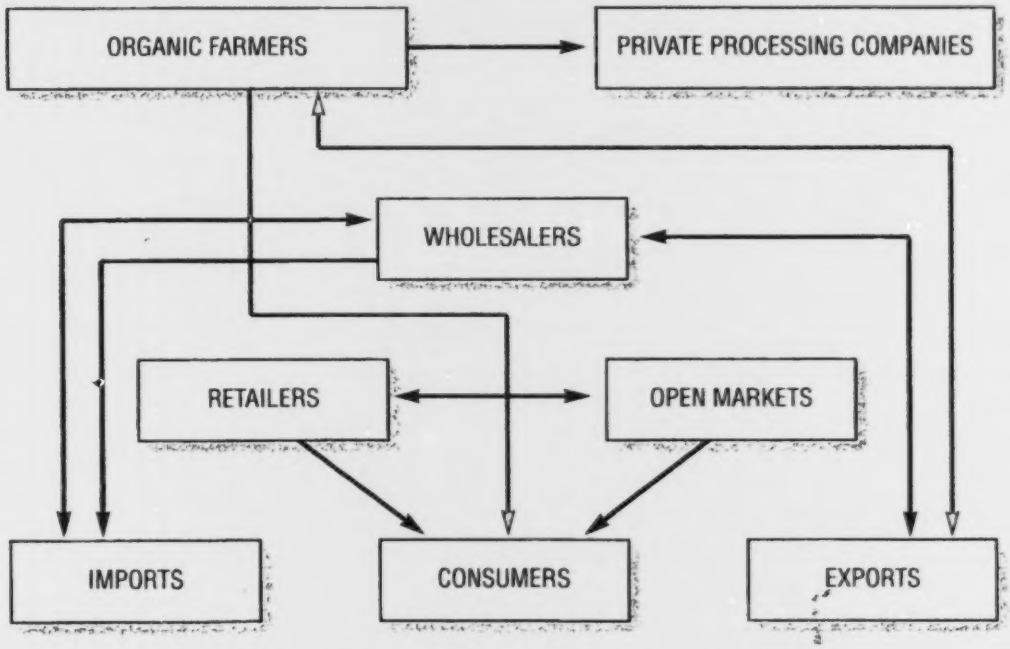


Figure 5.2.3. **Supply chain of organic products in Spain**

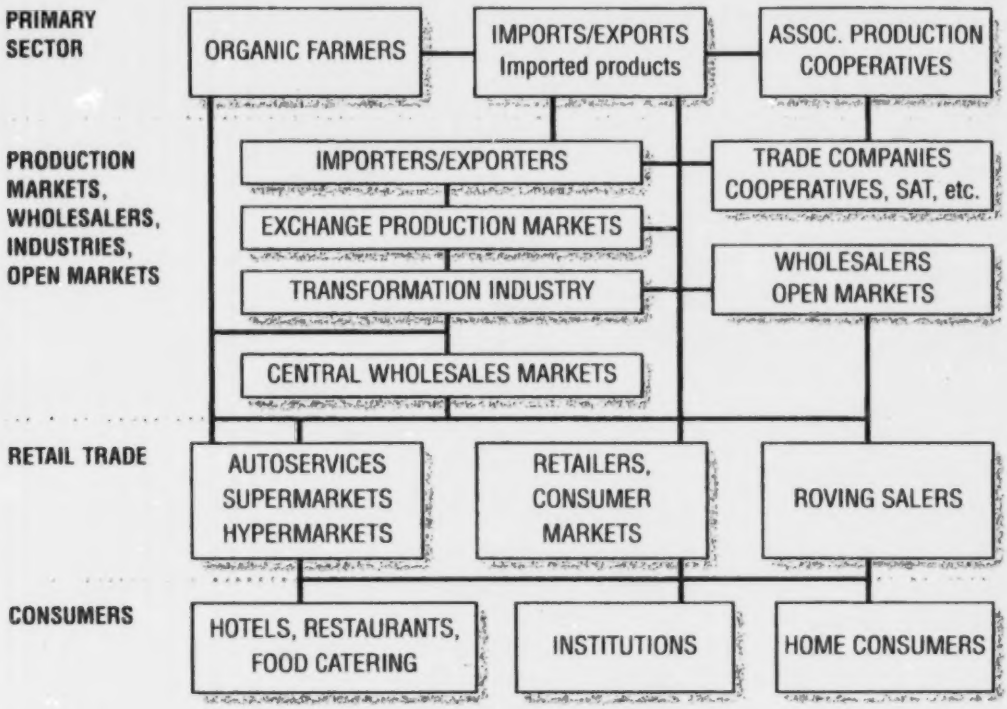
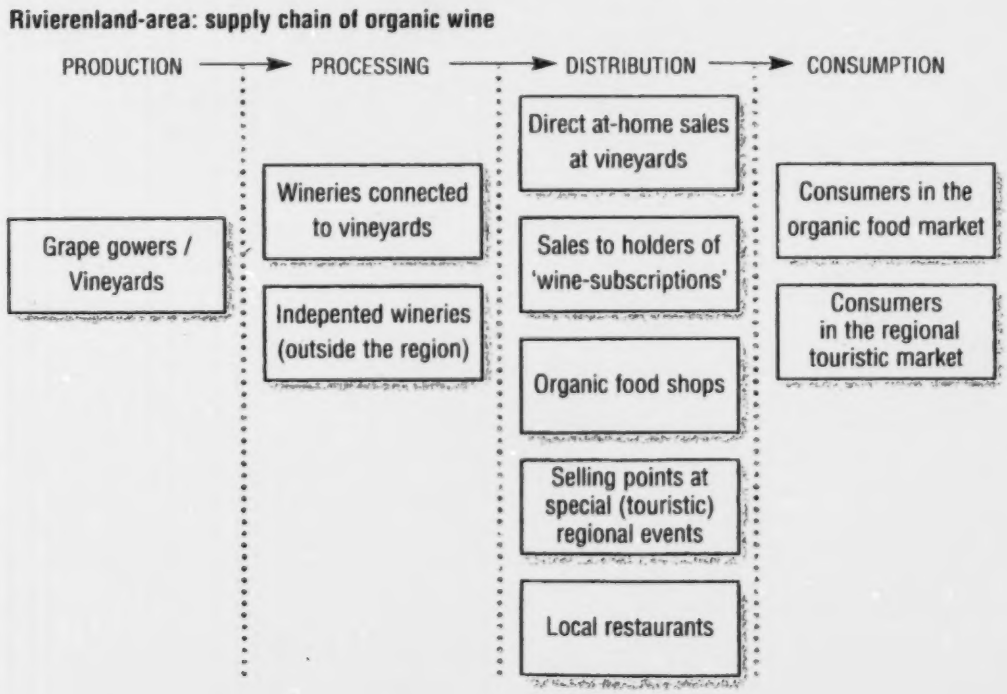
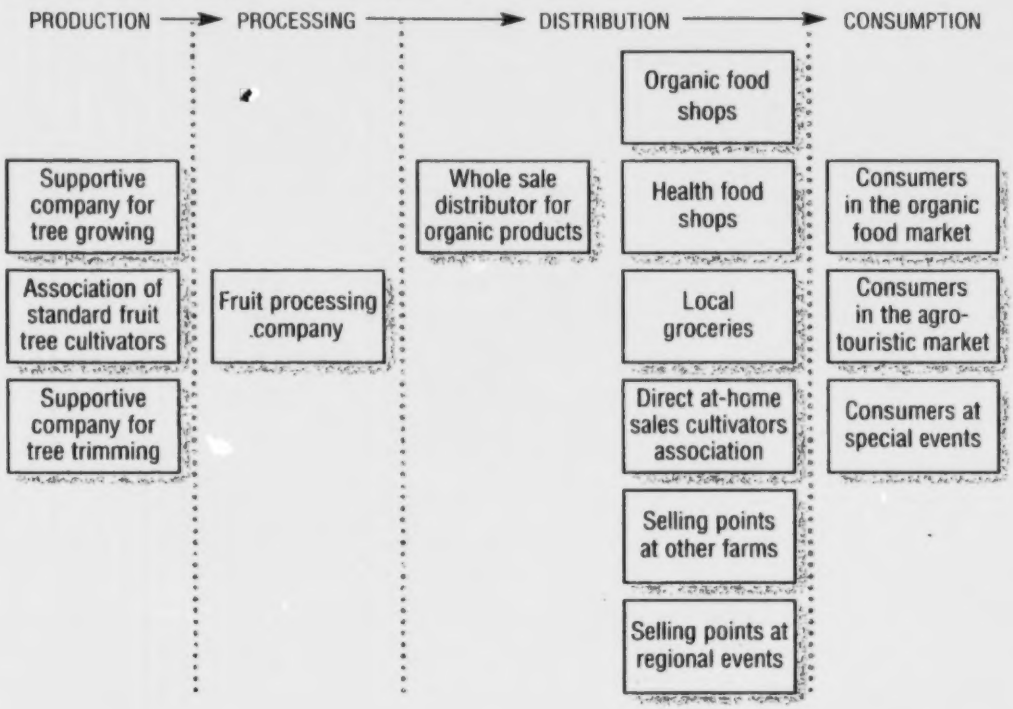


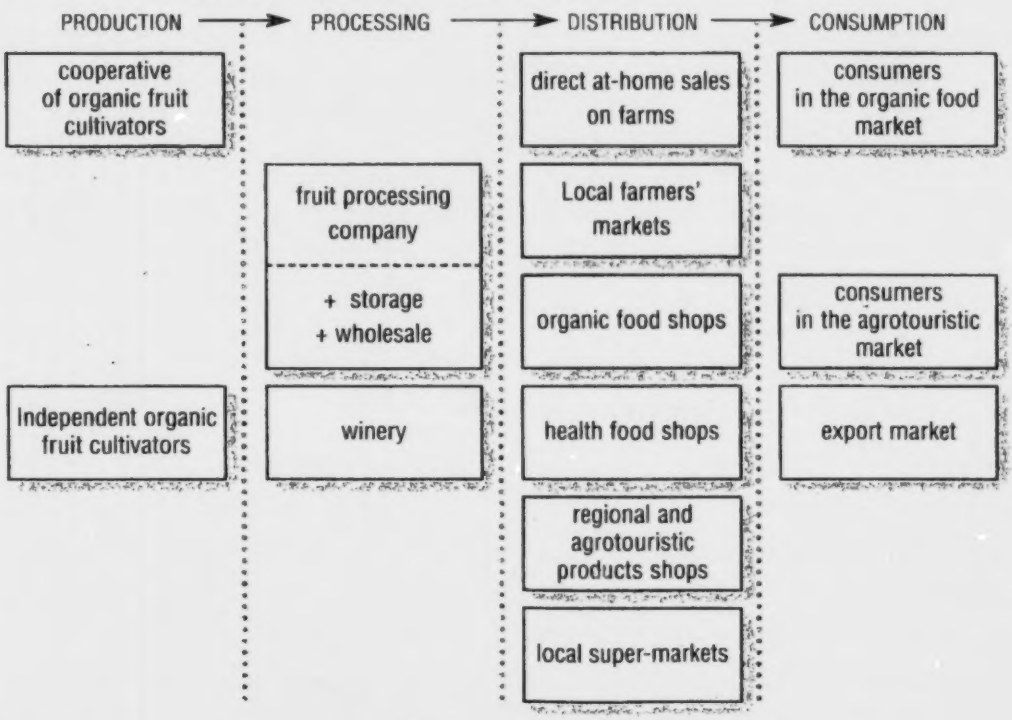
Figure 5.2.4. **Supply chain of organic products in the Netherlands**



Rivierenland-area: supply chain of organic fruit and juices



Wadden-area: supply chain of organic fruit, fruit juices and wine



5.3. Consumers of organic products

Consumers should be informed about the relationship between organic products and health –and environmental matters, where they can find these products, and how this affects costs (Fotopoulos, 1996).

According to Homer and Kahle (1988), consumer attitudes about nutrition and healthy foods influence their buying behaviour. More precisely, positive purchase decisions are closely related to consumers' sensitivity on diet issues. A USA survey (Nutrition Week, 1991) underlined that consumers seemed to be sceptical regarding the nutritive value of organic products, supporting the view that no clear taste preference exists between organic and conventional foods.

Consumers are interested in food safety, so government agencies must give clear and specific advice in this respect (Beharrel *et al*, 1991). However, consumers need to have information about the freshness of item and to see certification that the products are indeed organic in order to be willing to pay a premium for them. Organic fruit and vegetables are purchased much more than chicken, beef and eggs, as they are more available (Jolly *et al*, 1989).

Consumers need better information about the meaning and certification of organic status (Park and Lohr, 1996). As Hutchins and Greenhalgh (1997) stated, consumers are confused about the meaning of the term 'organic'. Therefore, a strategy that promotes the 'environmentally friendly' aspect of organic produce (instead of focusing on the 'organic' label) needs to be considered.

Thimm *et al* (1992) also pointed out that product attributes such as quality, freshness, personal preference, taste, nutritive value, safety, physical appearance, price and availability are the most important attributes which encourage people to buy organic foods.

In most developed countries, there is a tendency derived from changes in consumer attitudes after they become aware of and informed about hygiene and organic products. This tendency results on one hand in a reduction in the influence of economic factors that determine consumption while on the other it contributes positively to the development of optimum consumption conditions for organic products.

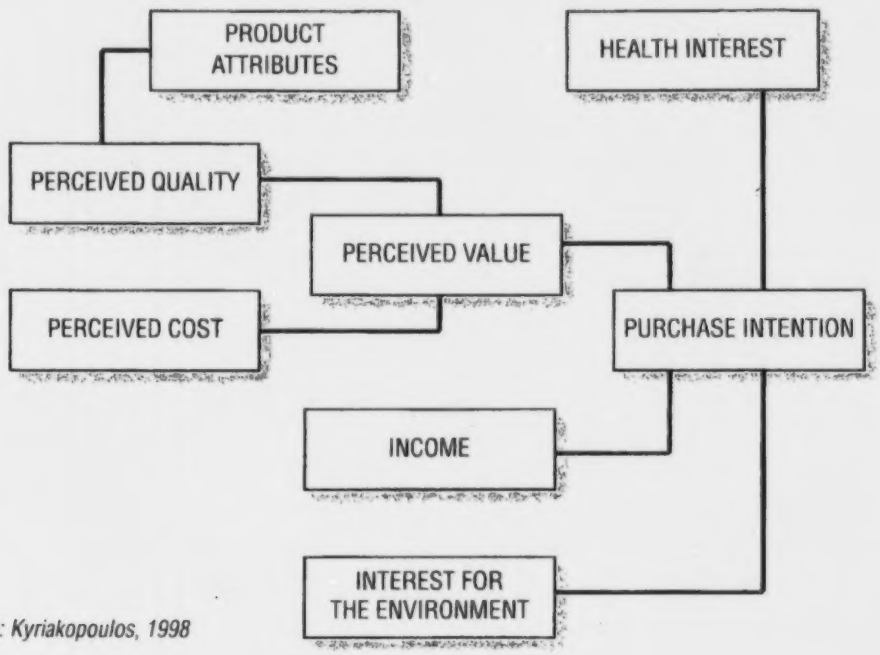
The European Commission Action Programme for consumer policy defined the following priorities for the period 1996-1998 (EUR-OP, NEWS, 3/1997):

(a) consumer education and awareness improvement;
(b) protection of consumer interests;
(c) measures which help consumers to benefit from 'information society possibilities';
(d) improve consumers' confidence in foods.

According to Kyriakopoulos (1998), consumer behaviour on organic products can be described in the following phases:

(a) perception of product attributes and their contribution to the perceived quality of the product: quality is evaluated with a series of attributes, evaluation criteria (attributes, benefits, social effects). Therefore, perceived quality derives from these criteria. But consumers differ in perception of product attributes. Therefore, the perception of attributes and not the attributes themselves are of major priority;
(b) perceived quality and perceived cost determine perceived value: consumers willingness to pay is critical for the successful introduction of organic products in the marketplace. Cost and quality interact to determine the value, i.e. the cheaper will be preferred. Therefore, quality is not enough to explain consumer preferences. Cost must be considered, and the meaning of perceived value provides this alternative;
(c) interaction between perceived value, attitudes and income determines the purchase intention. Three parameters influence the final consumer behaviour: the perceived product value, the derived consumer preference and the available income. Income may 'misrepresent' the effect of value, as price may exceed the consumer's income limitation;
(d) attitudes, such as environmental interest and interest for health, lead consumers to prefer organic products. A consumer conscious of the environment and health, will prefer an expensive organic than a cheap conventional product, even if their income is a restricted parameter.

Figure 5.3. **Model for the consumer behaviour on organic products**



Source: Kyriakopoulos, 1998

CHAPTER 6

The national case studies

6.1. Methodology of primary data collection – analysis and results

Primary data collection was based on the preparation of specific questionnaires, which were common for all the countries in the present study (Germany, Greece, Portugal, Spain, The Netherlands). The sections and the design of the questionnaires, as well as the sample selection, were common for all the case studies.

Data collection was made using personal interviews at the work environment of the respondents in specific areas. In Greece the survey area was Central Macedonia and the products studied were organic wine and olive oil. The same products were chosen also from Portugal, where the area under survey was Tras-os-Montes and Alto Douro. In Germany, Bundesland Hessen was the selected area for the case study, and the products studied were organic wine and potatoes. Catalonia and Aragon were selected by the Spanish team as the survey area, where organic wine and vegetables were the selected products. Finally, the Dutch partners, decided to focus the study on organic wine and fruit juice production, in the regions of Gelderland and Friesland.

The distribution of interviews by participant and country is presented in the following table. The categories of participant were: organic farmers, inspectors of organic farms, extensionists, directors of agricultural training centres, teachers from high and technical vocational schools, retailers and consumers. The results presented in the following section follow the order described here.

Table 6.1.1. **Number of interviews in each country**

	Germany	Greece	Portugal	Spain	The Netherlands
1. Farmers	20	20	15	15	12
2.Agronomists inspectors (private or civil servants)	2	2	2	3	1
3. Extensionists	4	4	4	4	3
4. Directors of Agri-cultural Training Centres	1	2	3	2	1
5. Teachers					
a. high schools	2	2	10		
b. technical schools	2	2	4	7	3
6. Retailers	3	3	3	3	3
7. Consumers	5	5	8	5	4
TOTAL	**39**	**40**	**49**	**39**	**27**

6.2. Interviews with certified organic farmers (6)

6.2.1. The German case

The German part of the investigation took place in the wine growing areas Rheingau and Mittelhessen. The Rheingau is the most important wine growing area in Hessen. Ten vine growers were interviewed. Since only seven organic vine growers could be found in Hessen, three vine growers from the region Mittelrhein were questioned in addition. This area is situated on the opposite site of the Rhine next to the Rheingau and belongs to the federal state Rheinland-Pfalz. Due to similar structures of the wine growing enterprises, the vine growers of these two areas are joined together in one regional workshop of the association of organic viniculture *BÖW*.

The survey of organic potato growing farmers took place in the area Marburg, Wetzlar and Limburg. The addresses of the enterprises were determined by a map of Hessen which indicates all direct marketing organic farms who belong to the three biggest organic farmer organisations (*Bioland*, *Demeter* and *Naturland*). In addition farmers themselves provided information.

(6) In cases where there is no distinction in the results obtained from the two categories of farmers interviewed, the findings are similar.

The profile of the farmers was as follows:

- aged between 35-50 years old;
- level of education: *abitur;*
- membership of agriculture professional unions/cooperatives.

The profile of the enterprises was as follows:

- average farm size: 5 ha (viniculture) and 20 ha (potatoes);
- full-time farmers;
- family members are employed in the farm in half of the respondents;
- half of the interviewed enterprises employ seasonal or permanent farm workers.

Cultivation techniques quoted were:

(a) follow fertilisation programme based on: soil analysis, own experience, consultancy by inspectors, agronomists, retailers, magazines, exchange with friends and colleagues;

(b) variety choice according to tradition, consumer preferences, quality of type, storing quality, resistance against diseases;

(c) apply plant protection products preventively based on: consultancy from the Ministry of Agriculture, agronomists, retailers, magazines, experience, exchange with friends and colleagues;

(d) problems: time of application, lack of resistant varieties, plat protection, weeds, marketing.

Aspects of inspection and certification of organic products included:

- collaboration with private certification institutes;
- appropriate cost of inspection;
- visits for inspection depend on the needs (at least once a year);
- sampling inspection of the final product by producers' associations.

Aspects of distribution included:

(a) directly to:
  (i) wholesalers;
  (ii) retailers;
  (iii) catering;
  (iv) producer associations;
  (v) consumers

(b) label the product by themselves, whereas the bottling is provided by a private contractor;

(c) for potatoes, the labelling is provided either by the farmers themselves or by their associations.

The level of information and training needs included:

(a) sources of information and knowledge:
  (i) training courses by certification institutes and farmers' associations;
  (ii) extensionists;
  (iii) private inspectors;
  (iv) books and leaflets;
(b) training needs are focused on:
  (i) future of organic farming;
  (ii) marketing.

All the farmers cultivate according to EU Regulation 2092/91 on organic farming. The majority of the interviewed farmers are fully employed in the enterprise. They mostly employ permanent farm workers, though during the harvest period some of them have additional employees; as few as nine but up to 25 workers.

The vine growers decide about type and quantity of fertiliser mainly on the base of a soil analysis and on their own experiences. All farmers apply plant protection products preventively. Plant protection products against fungal diseases allowed for organic wine growing show effects only in preventive use.

The majority of the enterprises are checked by the private organisation for inspection of organic products (*Gesellschaft für Ressourcenschutz, GfRs*). All farmers choose the *GfRs* due to its close relationship with associations of organic farmers. The inspections take place between March and July and are carried out once per year. Accountancy, the turnover of goods, fields and storage are included in the process along with compliance checks on vineyards.

All the growers sell their wine directly to consumers. Additionally, storekeepers, catering trades and retailers are named as buyers. Almost all vine growers press and label their grapes on their own. However, the grapes of the estate of Hessen are pressed in a central cellar, where the grapes of the conventional estates of Hessen are also pressed. The bottling is done by a private contractor. Almost all the farmers use their own labels on the bottles in addition to the label of the association.

Farmers gained their knowledge about organic farming in courses of the *BÖW*. Farmers who want to join the *BÖW* have to take part in their introductory courses on organic farming. Additionally, agricultural literature, farmers' organisations and exchanges with friends and colleagues appeared to be important sources of knowledge and information. Regarding knowledge about organic vine growing, the extension of the local public agricultural services (*ARLL*) plays an important role.

The vine growers and organic farmers show differing interests in further education. Vine growers are mainly interested in courses on cultivation methods, especially on alternative plant protection and fertiliser, whereas organic farmers are interested in courses about management and marketing. Noticeable differences mainly are the evaluation of courses on agricultural policy, a topic of minor importance for vine growers in contrast to farmers. In the case of plant protection products, the opposite is true. Training courses on trade policy, exports and EU policy for the protection of consumers are considered by both groups to be of minor importance.

According to farmers and vine growers, the future of agriculture depends on market conditions, retailers and industry and the EU. The preferences of consumers, the Ministry of Agriculture, the farmers, as well as their associations, are seen to play a less important role.

6.2.2. **The Greek case**

Ten certified organic farmers with viniculture farms and ten certified organic farmers with olive trees were interviewed in the region of Central Macedonia. The main results derived from the questionnaire analysis are described in the following sections.

The profile of the farmers was as follows:

- < 45 years old;
- level of education: technical vocational school (TVS) and university;
- membership of agriculture professional unions/cooperatives.

The profile of the enterprises was as follows:

- average farm size: 3 ha (viniculture) and 6 ha (olive trees);
- part-time farmers (viniculture) – full time farmers (olive trees);
- no seasonal or permanent workers (viniculture) – one seasonal employee from the family and at least two seasonal farm workers (olive trees).

Cultivation techniques quoted were:

- follow fertilisation programme;
- advice from private and public bodies as well as from exchanges with other farmers;
- read relevant books and leaflets.

Aspects of inspection and certification of organic products included:

- collaboration with private certification institute '*DIO*';
- twice a year visits for inspection;
- sampling inspection of the final product by private and public services.

Aspects of distribution included:

(a) directly to:
  (i) local wineries or olive press companies;
  (ii) wholesalers;
  (iii) retailers;
  (iv) consumers;
(b) process the product themselves and provide it to consumers afterwards;
(c) the final product is distributed by winemakers to wholesalers and cellars.

The level of information and training needs included:

(a) sources of information and knowledge:
  (i) university;
  (ii) seminars and training courses;
  (iii) extensionists;
  (iv) inspectors;
  (v) agronomists – advisors;
  (vi) books and leaflets.
(b) training needs are focused on:
  (i) product quality;
  (ii) modern plant protection products;
  (iii) plant nutrition/fertilisation;
  (iv) marketing/agricultural policy
  (v) certification of organic products.

Since 1988 all the respondents have operated according to EU Regulation 2078/92, and receive subsidies for their crops. The majority of farmers are rather young (under 45 years old), have a high level of education (graduates from technical vocational schools and universities) and most of them are not organised in a professional union or organisation. Despite their high educational level, they express a lack of knowledge and the need for further training and information provision in all the aspects of organic farming.

The average farm size that is cultivated organically is about three hectares, non irrigated and privately-owned. Farm workers are not found in organic farms in Greece, since the labour supply is provided from the family members of the farmer. They consult a number of sources for information on fertilisation: agronomists-extensionists, agronomists-inspectors from certification organisations, private consultant agronomists, and technical leaflets.

All the respondents stated that they collaborate with the *DIO* certification organisation. The *DIO* inspects organic farms during the cultivation period (inspectors visit the farm at least twice a year from the beginning of the cultivation period to the harvest), as well as inspecting the final product (for potential residues of non-approved substances).

Farmers sell their product either to the local winery, which undertakes the processing and packaging of the product, or they undertake the processing phase. All the processed products have the label of *DIO* as a mark of certification that wine comes from 'organically cultivated vineyards'. The distribution of the final product is provided either by farmers to the final consumers or by wine-makers to wholesalers and cellars.

Viniculture farmers participating in the study consider that the future of agriculture depends - to a 'high level'- on EU policy and on consumers. The Ministry of Agriculture, wholesalers, industries and the market conditions influence agriculture to a medium level, whereas farmers and their unions and cooperatives have a minimum role and influence on the future of agriculture.

Farmers gathered the specific knowledge and information required for the successful implementation of organic farming from university (for farmers-agronomists), the agronomist–inspectors, DIO seminars and training courses, private consultant agronomists, and, rarely, from agricultural training centres (*KEGE*).

There is an expressed lack of knowledge and need for training in order fully to meet the needs of organic farming. The most important training courses, according to their answers, are the following:

- product quality;
- modern plant protection products;
- basic principles of organic farming and economic perspectives;
- plant nutrition – fertilisation;
- variety selection based on market demands;
- alternative plant protection methods.

6.2.3. **The Portuguese case**

Ten producers of organic olives and five of organic wine were interviewed. They corresponded to a variety of situations, including the major farms which produce olives and transform them into olive oil (3), the major agro-industrial operators who produce and market olive oil (3), as well as producers who provide olives to the regional processing units (4). The ten cases are located in different counties of the region, mainly in the areas of Douro, Warm Land and the Miranda Plateau: Alfandega da Fé, Freixo de Espada à Cinta, Macedo de Cavaleiros, Mirandela, Mogadouro, Torre de Moncorvo, and Vila Flor.

It is important to stress that in the region studied there are 12 operators who process olives and produce organic olive oil and 147 who produce organic olives. The profile of the farmers was as follows:

- aged between 34-45 years old (olive trees) - >42 years (wine producers);
- level of education: above average (technical/university degrees);
- membership of agriculture professional unions/cooperatives.

The profile of the enterprises was as follows:

- average farm size: 58 ha (olive trees) and 25.2 ha (viniculture);
- part time farmers;
- most of the interviewed enterprises employ permanent farm workers.

Cultivation techniques quoted were:

- follow fertilisation programme based on: soil analysis, geographical location, availability of materials;
- do not use chemicals for plant protection in olive trees; mechanical and manual methods to control weeds in vineyards.

Aspects of inspection and certification of organic products included:

- collaboration with private certification institutes (*Socert*);
- reasonable cost of inspection;
- visits twice a year (olive trees), three times a year (vineyards);
- sampling inspection of soil, leaves and the final product by private certification organisation.

Aspects of distribution included:

(a) olive oil directly to:
  (i) consumers;
  (ii) exports;
(b) wine directly to:
  (i) certified shops;
  (ii) supermarkets.

The level of information and training needs included:

(a) sources of information and knowledge:
  (i) training courses;
  (ii) certification institutes and farmers' associations;
  (iii) books and leaflets;

(b) training needs are focused on:
  (i) product quality;
  (ii) soil nutrition and fertilisation;
  (iii) plant protection;
  (iv) marketing.

No public extension services support these farmers.

In terms of fertilisation, the use of sheep manure is quite common, due to the importance of this type of animal production in the region. Some also use natural phosphates and humus. In terms of plant protection, it is not common to apply chemicals in the olive groves, even in conventional production. Weeds are mainly controlled through soil tillage, but the spreading of triturated wood in the soil, at the end of winter, also contributes to limiting the amount of undesirable plants.

Control and certification are done in all ten cases by *Socert*-Portugal. All the farmers requested *Socert* services as it was, at the time, the only option. *Socert* agents visit each farm, normally, twice a year. They also collect samples of soil, leaves, fruits, legumes or processed products, to be analysed in the laboratory. These are the general procedures for all crops.

The oil is mainly sold directly to consumers, at the farm, or directly exported. However, the producers also sell the olive oil to certified stores (where other organic products are sold), in food and nutrition stores, and major supermarkets.

As in the case of grape and wine producers, these farmers and other operators use a variety of sources of information to develop their knowledge about organic production methods: the organic farmers' associations (*Agrobio* in particular); *Socert*, the control and certification institution with which they work; training courses; specialised literature; and sellers of farm inputs. There are no public extension services supporting these farmers.

For most operators, the future depends significantly on EU policies, retail and agri-industries, farmers and their organisations, demand from consumers and market conditions. Organic farmers will have to take an introductory training course on organic farming, and to be assisted regularly by a technical consultant who will work for an association. This is the case, already, with integrated pest management farmers.

All the farms studied had permanent paid workers, and hired others at peak labour periods, particularly pruning and harvest. The great majority is non-qualified workers who have no training in organic methods and perform many functions at the farm. Training activities have been directed to farm owners and managers. In the case of pruning, it is likely that a high percentage of workers had gone through some kind of specialised training, which, however, is not specific to organic farming. Other studies (Carvalho, 2000), showed that most organic farms are very small, do not use permanent paid workers, lack specialised labour to perform some functions and particularly labour to perform hard or heavy-duty work.

BEST COPY AVAILABLE

In addition, the conclusions of a study conducted in Portugal (Carvalho, 2000: 106-107) demonstrate that most farms (60 %), when changing to organic methods maintained the same volume of labour. However, in 25 % of the cases the labour requirements increased and in only 2 % decreased. It should be stressed, as well, that there is a strong potential to create employment in other segments of the production chain, such as the ones related to input production and commerce, product transformation, and commercialisation.

6.2.4. **The Spanish case**

The survey was carried out among ten vegetables and cereals growing farmers and five viniculture farmers in the regions of Catalonia and Aragón in Spain. These farmers were chosen because they are the most representative farmers according to the *CCPAE* inspectors.

The profile of the farmers was as follows:

- aged between 27-43 years old (olive trees) - > 42 years (wine producers);
- level of education: secondary and technical vocational school;
- membership of agriculture professional unions/cooperatives.

The profile of the enterprises was as follows:

- average farm size: 19.5 ha;
- full-time farmers;
- most of the interviewed enterprises employ seasonal farm workers.

Cultivation techniques quoted were:

- variety selection according to quality and resistance against diseases;
- follow fertilisation programme based on: soil analysis, own experience, exchange with friends and colleagues, consulting with public agricultural services;
- use plant protection products preventively;
- problems: control the weeds and plant diseases, availability of materials.

Aspects of inspection and certification of organic products included:

- collaboration with public certification institutes;
- visits at least once a year;
- sampling inspection of soil and the final product for chemical residues.

Aspects of distribution included:

(a) directly to:
  (i) producers' organisations;
  (ii) retailers;
  (iii) consumers;

(b) label the product twice: producers themselves and the name of the certification organisation.

BEST COPY AVAILABLE

The level of information and training needs included:

(a) sources of information and knowledge:
  (i) training courses;
  (ii) inspectors from certification institutes;
  (iii) books and leaflets;
(b) training needs are focused on:
  (i) product quality;
  (ii) certification of organic products;
  (iii) management and marketing of organic products.

No public extension services support these farmers (a situation which implies additional cost).

The majority of the farmers interviewed are fully employed in the enterprise, hiring permanent or seasonal farm workers during the harvest period. All farmers apply plant protection products preventively.

All the farmers are certified by the *CCPAE* (in Catalonia) or *CAAE* (in Aragón), as they are obliged to be. The same process occurs in other autonomous communities with these competences. The inspections take place once at year. Additionally, about 10 % of the enterprises are inspected unannounced.

Farmers sell their products to retailers, producer organisations, or directly to consumers. Twelve producers pack their products and use both the label of the certification organisation and their own label.

The most important sources of information about organic agriculture are agrarian professional training centres, inspectors of the certification organisation, and books and magazines. Both types of farmer show similar interests in relation to further education. Therefore, they are interested in the management and marketing of organic products and product quality.

6.2.5. **The Dutch case**

In the Netherlands two regional networks of organic fruit farmers were investigated. One of them is a cooperative within a broader network, which also organises producers of organic products other than fruit, fruit juices and wine. The other is a producers' association that solely produces organic fruit and fruit products. Both farmers' networks have set up their own companies for the processing of grapes and fruits. The owners of these companies were also interviewed. In addition, a number of interviews with specialised wine producers took place, some of them belonging to the small number of Dutch winegrowers who work in a fully organic way.

The profile of the farmers was as follows:

- aged more than 40 years;
- level of education: medium/higher level vocational education;
- members of cooperatives and professional associations.

The profile of the enterprises was as follows:

- average farm size: 2 ha (fruits) and less than 1 ha (wine);
- part-time farmers;
- no paid employees, family members and pickers assist during the season;
- farms are part of larger cooperative network, including processors and distributors.

Cultivation techniques quoted included:

- fertilisation programme using only organic fertilisers, based on own experience, expert, consultancy, exchange of information with colleagues in cooperatives;
- choice variety according to specific criteria - resistance against diseases and climatic circumstances, regional character of products, quality of varieties, consumer preferences;
- plant protection techniques according to organic principles, by specific combination of varieties, specific alteration of varieties, specific trimming and picking techniques, maintaining ecological balances.

Aspects of inspection and certification of organic products included:

- collaboration with organic certification institute *SKAL* (ECO-licence);
- collective *SKAL/EKO* licences for members of cooperatives
- inspection visits two to four times a year on larger farms;
- inspection usually including administrative input control, visual inspection of farms, analysis of soil samples, analysis of samples of raw fruits/grapes and final products.

Aspects of distribution included:

(a) directly to consumers (home sales);
(b) to holders of subscriptions (wholesalers);
(c) to organic and health food shops;
(d) to selling points for regional agrotourism products;
(e) some distribution to local restaurants and supermarkets;
(f) sales under *EKO* label and specific label of producers/processors themselves.

The level of information and training needs included:

(a) sources of information and knowledge:
  (i) literature, special magazines, general press, the Internet;
  (ii) consulting experts in organic cultivation;
  (iii) exchange of information within cooperation;
  (iv) study groups and meetings with colleague-farmers;
  (v) contacts with (international) pilot stations;
  (vi) feedback from inspection services;

(b) training needs are focused on:
  (i) organic improvement of soil quality;
  (ii) organic prevention of weeds and fungi;
  (iii) organic soil, tree and plant protection;
  (iv) adequate layout of vineyards and orchards;
  (v) development of consumer information;
  (vi) entrepreneurship in organic agriculture.

The majority of farmers interviewed were more than 40 years old, with a high level of education. They are part-time farmers and run the enterprises on their own, with some help from their family members. Occasionally, students of agricultural schools work in yards for their work-experience period. In the harvesting season they get help from a number of volunteers who are recruited in the neighbourhood.

The average farm size that is cultivated organically is about two hectares for fruits and less than one hectare for vineyards. It is worth noting that organic farms are a part of a larger cooperative network, including processors and distributors.

Fertilisation programmes are based on their own experience, the views of experts, and on exchanges with colleagues in the cooperative. In order to choose the varieties of their products, farmers consider the climate, the regional character of the product, quality, and resistance against diseases and consumer preferences. As far as the plant protection methods are concerned, farmers use only appropriate products, according to the principles of organic cultivation.

All the respondents collaborate with *SKAL* organic certification organisation. *SKAL* inspects organic farms during the cultivation period (inspectors visit the farm two to four times a year from the beginning of the cultivation period to the harvest). Inspection usually includes administrative input control, visual inspection of farms, analysis of soil samples, analysis of samples of raw fruits/grapes and final products.

Farmers sell their products directly to consumers. Additionally, significant quantities are distributed by wholesalers, organic food shops, and local restaurants and supermarkets. All the processed products have the *EKO*-label as a mark of certification and the specific label of the producers/processors themselves.

Farmers derive the specific knowledge and information required for the successful implementation of organic farming, from a number of sources: literature, special magazines, the press, the Internet, consultants, cooperatives, exchanges with their colleagues, and from inspection services.

There is an expressed lack of knowledge and need for training in order fully to meet the needs of organic farming. The most important training courses, according to their answers are the following:

(a) organic improvement of soil quality;
(b) organic prevention from weeds and moulds;
(c) organic soil, tree and plant protection;
(d) adequate layout of vineyards and orchards;
(e) development of consumer information;
(f) entrepreneurship in organic agriculture.

6.2.6. **Comparative results for organic farmers**

After the analytical presentation of the case studies in each country, it is important to present briefly the results in table form.

Table 6.2.6.1 indicates the major characteristics and parameters of the organic farmer, who is the core of this study. Based on the tables the main conclusions regarding the profile of organic farmers are as follows:

(a) organic farmers are rather young with medium and high level of education;

(b) the farm size and the type of employment in agriculture vary among countries: in Portugal and the Netherlands organic farmers are part-time farmers, whereas in Germany, Spain and Greece, the majority of organic farmers are fully employed in agriculture. Moreover, in Germany and Portugal organic enterprises employ also permanent farm workers;

(c) in all five countries organic products are labelled for distribution. Certification processes are provided through private certification institutes except in Spain. In addition, labelling in Germany and Spain is also provided by the producers themselves;

(d) the distribution of organic products is directly either to retailers with certified shops or to consumers. Producer associations also play an important role in the distribution process of organic products in four of the countries, the exception being Greece. However, in Germany, Greece and the Netherlands, wholesalers and cellars are major distribution channels;

(e) the main sources of information regarding organic farming practices are training courses, though magazines, leaflets and books are important.

(f) the role of the following bodies is important in information and dissemination:
  (i) certification institutes in Germany, Greece and Portugal;
  (ii) farmers' associations in Germany, Portugal and the Netherlands;
  (iii) extensionists/experts in Germany, Greece and the Netherlands;
  (iv) inspectors from private certification institutes in Germany and Spain;

(g) the most important training needs concern the following courses:
  (i) marketing of organic products (Germany, Greece, Portugal, Spain);
  (ii) plant protection (Greece, Portugal, Spain, the Netherlands);
  (iii) product quality (Greece, Portugal, Spain);
  (iv) soil nutrition and fertilisation (Greece, Portugal, the Netherlands).

Table 6.2.6.1. **Results obtained from organic farmers' interview**

	Germany	Greece	Portugal	Spain	The Netherlands
Farmers' profile					
Age (years old)	35-50	35-45	35-45	27-43	>40
Level of education					
Secondary	x			x	x
Technical vocational schools		x		x	x
University		x	x		
Enterprise profile					
I. Average farm size					
a. vine culture	5 ha	3 ha	25.2 ha	19.5 ha	2 ha
b. olives trees		6 ha	58 ha		
c. potatoes	20 ha				
d. vegetable					19.5 ha
e. fruits					1 ha
II. Employment:					
a. part-time		x	x		x
b. full-time	x	x		x	
c. farm workers (permanent)	x		x		
Inspection and certification of organic products					
a. public certif. institutes				x	
b. private certif. institutes	x	x	x		x
c. label					
producers themselves	x			x	
certifications' organisation	x	x	x	x	x
Distribution of the product directly to					
a. wholesalers/cellars	x	x			x
b. retailers/certified shops	x	x	x	x	x
c. exporters			x		
d. consumers	x	x	x	x	x
e. producers organisations / associations	x	x		x	
f. restaurants/supermarkets					x
Sources of information					
a. training courses	x	x	x	x	x
b. certification institutes	x	x	x		
c. farmers' associations	x		x		
d. extensionists/experts	x	x			x
e. private inspectors	x			x	
f. books and leaflets	x	x	x	x	x
g. colleagues/friends	x				x
Training needs					
a. product quality	x	x	x		
b. soil nutrition & fertilisation		x	x		x
c. plant protection		x	x	x	x
d. marketing	x	x	x	x	
e. certif. of organic products		x		x	
f. future of organic farming		x		x	

Source: Questionnaires

BEST COPY AVAILABLE

6.3. Interviews with agronomists inspectors (7) from certification organisations

6.3.1. **The German case**

The two inspectors interviewed are licensed by the country of Hessen and belong to the boards of inspection of Alicon GmbH, the organisation for inspection. One of the inspectors was interviewed directly whereas the second interview took place by phone, since this inspector is strongly integrated into the work within the board of inspection and actually carries out inspections only on an irregular basis.

The boards that were considered in the survey were founded between 1989 and 1992, in one instance as a result of an initiative by farmers and agricultural advisers. More than 35 and 45 persons collaborate with each board. Most of the time the inspectors work self-dependent and for honorarium per hour.

The profile of the inspectors is as follows:

(a) agronomists specialised in plant production and environmental protection;
(b) attended training courses at a national inspection association;
(c) supervised several types of farms such as: arboriculture, vineyards, vegetables, cereals, greenhouses;
(d) involved in activities such as:
  (i) inspection and certification of organic products (50 % of their work time);
  (ii) information search (10 %);
  (iii) provision of technical support to farmers (10 %);
  (iv) administrative work (30 %);
(e) source information from agronomists, farmers, literature, the Internet;
(f) need for training in organic farming and certification of organic products;
(g) believe that the future development of organic farming should be focused on:
  (i) technical support from the state;
  (ii) economic subsidies;
  (iii) lower consumer prices of organic products.

(7) Agronomist inspector is the person who has a university degree in agricultural science, and who is responsible for the inspection of a number of organically cultivated enterprises. More precisely, the inspection is the procedure under which the agronomist checks whether the farmer cultivates his farm according to the principles of organic farming determined by the EU Regulation 2092/91. The inspector is employed by the Inspection and Certification Organisation.

One interviewee spends about 90 % of his time on the inspection of organic enterprises and the rest on administrative work. The other inspector allocates his time as follows: testing of organic products (5 % of his time); searching for information about national and European agricultural policy (15 %); technical advice (15 %); certification of organic products (15 %); and administrative work (50 %). Generally the interviewees are of the opinion that the whole certification process could be simplified by EDP and the Internet.

All German inspection boards are members of an association *Konferenz der Kontrollstellen (KdK)*. A number of courses dealing with the specialised work of the boards are organised by this association. Typical course topics are the implementation of animal regulations, cooperation with the inspection authorities, changes in the area of genetic engineering and special training for inspectors. Both inspectors are involved in national and international meetings, courses at the *KdK* and internal programmes of advanced training.

Farmers needs from the inspectors can cover technical advice, subsidies and even information on marketing. However, more frequently farmers need information about how to convert their farms. The two inspectors are not asked for management advice. Courses on organic farming and the certification process are considered by the inspectors to be a major requirement. The inspectors believe that these courses could be carried out by the Ministry of Agriculture, universities or boards of inspection.

According to one of the inspectors, expansion of organic farming is not easy to achieve. At first a clear political statement would be necessary to strengthen the position of organic farming it needs to be more than a talking point. In his opinion supporting schemes should be clearly targeted at organic farming. The other inspector describes the situation in a similar way but is convinced that organic farming could be expanded easily by expanding the support measures.

6.3.2. **The Greek case**

The Inspection and Certification Organisation of Organic Products, *DIO*, is a non-profit company of public benefit formed in January 1993, and employs 36 people. There are other two certification organisations, *SOGE* and *Physiologiki*, which inspect a smaller number of organic agricultural enterprises.

The profile of the inspectors is as follows:

(a) agronomists specialised in plant production;
(b) attended seminars and scientific conferences;
(c) attended training courses by the certification institute;
(d) supervised several types of farms such as arboriculture, vineyards, horticulture, cereals, industrial crops;

(e) involved in activities such as:
  (i) inspection and certification of organic products (80 % of their work time);
  (ii) information provision to farmers, consumers, marketing bodies;
  (iii) personal training;
(f) source information from agronomists, farmers, literature, research institutes, universities.
(g) need for training in:
  (i) agricultural methods friendly to the environment;
  (ii) plant protection;
  (iii) marketing of organic products;
  (iv) environmental education;
  (v) quality control and certification of organic products.
(h) believe future development of organic farming should be focused on:
  (i) inspection and certification of organic products;
  (ii) quality based on taste and flavour;
  (iii) consumer protection;
  (iv) marketing organisation.

The interviews with two inspectors of organic products took place in the *DIO* office in Central Macedonia (Krya Vrisi, Pella prefecture). The two inspectors are agronomists specialising in plant production, employed by *DIO*. They have attended training courses and meetings on organic farming, organised by the Ministry of Agriculture and the Geotechnical Chamber of Greece, and each year receive further training at DIO seminars in order to be more effective. In addition, they attend scientific conferences in Greece and abroad related to:

- biodiversity;
- soil fertility;
- plant protection.

It is one of their beliefs that the training courses they attended helped them to improve their knowledge, in combination with the frequent involvement with organic farming methods and the study of the relative literature. All of these contributed to the gathering of useful experience. Their time is spent on inspection and certification (80 % of the total working hours) and information provision to farmers, consumers, marketing institutes, meetings, etc. (20 % of the total working hours). They gather information about the difficulties of the industry from agronomists, farmers, literature, *DIO* journal, and sometimes they consult research institutes and universities.

They see the development of organic farming being focused on the inspection and certification of the final product, the quality of the final product, consumer protection and marketing of organic products.

6.3.3. **The Portuguese case**

The profile of the inspectors is as follows:

(a) agronomists specialising in plant production;
(b) attended training courses in organic farming, inspection and certification of organic products;
(c) supervised several types of farms such as arboriculture, vineyards, vegetables, cereals, greenhouses;
(d) involved in activities such as:
  (i) inspection and certification of organic products
  (ii) soil analysis
(e) source information mainly from relevant literature
(f) need for training in:
  (i) certification process of organic products;
  (ii) soil fertility and plant protection;
  (iii) quality control;
  (iv) consumer and environmental protection;
(g) believe that the future development of organic farming should be focused on:
  (i) training of farmers to improve their professionalism;
  (ii) increase in consumers consciousness about organic products;
  (iii) dissemination of information on organic products;
  (iv) organisation of marketing of organic products.

6.3.4. **The Spanish case**

There are three inspectors, two women and one man. The two women are civil servants of the Agrarian Department of Catalonia (*DARP*), and inspectors of *CCPAE*. They specialise in horticulture and gardening, breeding farms, and agrarian investigation and experimentation respectively.

The profile of the inspectors is as follows:

(a) agronomists specialised in horticulture and ecology;
(b) attended training courses in organic farming, environmental protection and marketing of organic products;
(c) supervised several types of farms such as arboriculture, vineyards, vegetables, cereals, greenhouses, industrial plants;
(d) involved in activities such as:
  (i) inspection and certification of organic products;
  (ii) administrative work;
  (iii) collaboration with international institutes;
  (iv) provision of technical support and information to farmers;
(e) source information from relevant literature, scientific meetings and conferences, national and private organic farming bodies;

(f) need for training in:
  (i) marketing of organic products;
  (ii) plant protection;
  (iii) environmental education;
  (iv) consumer and environmental protection;

(a) believe that the future development of organic farming should be focused on:
  (i) state support and policy implementation;
  (ii) product diversification within the conventional market;
  (iii) lower consumer prices for organic products;
  (iv) collaboration between national bodies and the farmers.

The inspectors attended a number of seminars (training courses) in the field of organic farming during the last five years:

- participative management;
- environmental training;
- organic waste management;
- organic agriculture inspection;
- marketing and manufacture of organic products.

They stated that these seminars offer them the opportunity to become more effective in their work, as they provided them with the appropriate knowledge and information. The inspectors visit organic farms at least twice a year.

They believe that future growth in organic agriculture will be difficult mainly due to the lack of economic support from the government, as well as due to the lack of technical support from the public services of the Ministry of Agriculture. Farmers have doubts about the profitability of organic farming, although organic products sell at a premium in the market. Another difficulty in the expansion of organic products is that organically produced products are not differentiated within the market from their conventional counterparts, since there is no market for them. Finally, the lack of adequate scientific research and experimentation in organic farming discourages further expansion of organic production.

The interviewees stated that the current situation of organic farming could be improved by the more widespread distribution of products; currently it is difficult to obtain organic products in non-specialised markets. Control processes should also be improved by more strict regulation and more frequent inspections. As far as consumer protection is concerned, there is a need for more information about the differences between organic products and dietetic, natural products.

6.3.5. **The Dutch case**

The Dutch case was focussed on the organic inspection service of *SKAL*, holder of the *EKO*-certificate, the major certificate for organic products in the Netherlands. *SKAL* has two types of inspectors: ten for organic farms and six for organic processing companies.

SKAL has two specific departments: one for certification and one for the control of products and companies. The certifying department is assisted by a board of experts, who are responsible for the establishment of the norms, regulations and procedures according to which farmers and products might be certified. There are separate boards of experts for different branches of agriculture and, in consequence, different types of agricultural products.

The control department is responsible for inspections in the field. The *SKAL*-inspectors are usually agronomists, with a medium level vocational education in agriculture and food technology. They develop their qualifications further by attending seminars, conferences and training courses. They usually supervise several types of affiliated farms, e.g. in branches such as plant production, horticulture, arable farming and cattle breeding. Inspectors normally cover a certain region of the Netherlands. Their major task is the inspection of organic farms and processing firms in order to see if the *SKAL*-certificate might be applied and continued further. Inspections might be of different kinds. Usually they consist of a combination of:

(a) an annual administrative check of the firms' bookkeeping to control fertilisers and other inputs;
(b) visual inspections of the farms and firms;
(c) analysis of samples of soil, trees, plants and raw products to control eventual residuals;
(d) increasingly, analysis of samples of processed final products.

The results of the inspections are reported back to the farmers in the form of evaluation reports, which indicate how the farmer meets the *SKAL* standards. Farmers who do not meet these criteria run the risk of loosing their *SKAL*-licence and, as a consequence, the right to sell their products under the *EKO*-label. Furthermore, within the framework of their inspection services, the inspectors provide information and technical support to farmers and they carry out administrative work. Their major sources of information are professional literature and exchanges with colleague agronomists/inspectors. In order to do their job well, they need to be adequately trained in agricultural organic farming methods. An important aspect of this should be training in (new) organic plant protection techniques.

For junior inspectors, *SKAL* has developed an internal training course of three to six months, which focuses on rules and regulations in different

BEST COPY AVAILABLE

agricultural areas. After this introductory training course, the junior develops his qualifications further on the job under the guidance of an older colleague. After one or two years the junior can work as a fully independent professional inspector. Furthermore, *SKAL* has an internal annual training plan for its inspectors. Training is usually given by the older, more experienced senior inspectors. Occasionally, an external expert is hired.

According to SKAL an important aspect of the future development of organic farming in the Netherlands is the economic support for organic agriculture. Currently, there is a debate on whether or not economic subsidies should be continued for farmers who want to convert from conventional to organic farming. Continuation of the subsidies could strongly stimulate the position of the organic sector. The same holds true for lower consumer prices for organic products. Furthermore, an improvement in the quality and also the marketing of organic products could strengthen organic farming in the Netherlands. Currently in the Netherlands, both the supply of organic products and their market provisions are unable to meet increasing consumer demands.

6.3.6. **Comparative results of agronomists inspectors**

This section presents professional activities of employees in certification institutes for organic products (Table 6.3.6.1). The main results obtained from the analysis of the case studies are described below.

All the inspectors are agronomists specialising in plant production. They have attended various training courses, many of them having also participated in international seminars and conferences regarding organic farming (Greece, Spain, the Netherlands). Their activities are mainly focused on:

(a) the supervision of several types of organic farms;
(b) inspection and certification of organically produced products;
(c) provision of technical support to farmers during the cultivation period (Germany, Greece and the Netherlands);
(d) administrative duties (Germany, Spain and the Netherlands).

The main sources of information for inspectors are relevant literature, colleagues and participation in conferences (Germany, Greece and the Netherlands). In some cases, additional sources of information for inspectors are organic farmers, research institutes, the Internet, etc. Inspectors believe that their lack of knowledge mainly focuses on subjects relevant to:

- plant protection (Greece, Portugal, Spain, the Netherlands);
- certification process of organic products (Germany, Greece, Portugal);
- organic farming methods (Germany, Greece, the Netherlands).

Table 6.3.6.1. **Results obtained from inspectors' interview**

	Germany	Greece	Portugal	Spain	The Netherlands
Inspectors' profile					
• Agronomist specialised in plant production	x	x	x	x	x
• Attended seminars/ conferences		x		x	x
• Attended training courses	x	x	x	x	x
• Supervised several types of farms	x	x	x	x	x
Activities					
• inspection and certification of organic products	x	x	x	x	x
• information provision to:					
farmers	x	x			x
consumers		x			
marketing bodies		x			
• technical support/extension	x			x	x
• administrative work	x	x			x
Source of information					
• other agronomists	x	x			x
• farmers	x	x			
• research institutes		x			
• universities		x			
• literature	x	x	x	x	x
• Internet	x				
• organic farming bodies				x	
Training needs					
• organic farming methods	x	x			x
• plant protection		x	x	x	x
• marketing		x		x	
• environmental education		x		x	
• quality control		x	x		
• certification process of organic products	x	x	x		
• consumer & environmental protection			x	x	
Future development of organic farming should be focused on					
• product quality			x	x	
• marketing of organic products		x	x		x
• technical support from the state	x			x	
• economic subsidies	x				x
• lower consumer prices	x			x	x
• farmers' training (professionalism)			x		
• market expansion of organic products			x		
• consumers protection		x			
• collaboration between national bodies and farmers				x	

Source: Questionnaires

BEST COPY AVAILABLE

According to their beliefs, which differ among countries, the future development of organic farming should be focused on:

(a) the distribution and market organisation of organically produced products (Greece, Portugal, the Netherlands);
(b) the reduction of organic product prices (Germany, Spain, the Netherlands);
(c) the provision of technical support from the state (Germany, Greece, Spain).

6.4. Interviews with extensionists [8] from the local extension services

6.4.1. **The German case**

Interviews were conducted with four advisers of two regional offices for farming and landscape management. For the field of winegrowing, the department for viniculture in Eltville is responsible (adviser W1 and W2); for farming in general two advisers from the *ARLL* in Marburg were chosen (L1 and L2). Crucial criteria for the choice were that the selected advisers also cooperated with organic enterprises.

Personal data and education

All advisers are employed on a regular basis at their respective offices. Three of the advisers have a diploma in the field of wine-growing or general agricultural sciences. One adviser did her examination at a higher technical college for rural domestic science and home economics. The experience of the individual advisers in dealing with organic farming varies from five to eleven years. The two advisers of the department for viniculture deal exclusively with vine growers. The other two advisers mainly work for grain livestock farmers. L2 also works for beekeepers, orchards and vegetable-growing holdings as well as for summer flower growing enterprises.

Three of the advisers made statements about their distribution of time among different activities. One adviser spends almost 100 % of his time on advice on cultivation measures and only little time on gaining information about agricultural policy and administrative work. One of the agricultural advisers spends about 70 % of the time on advisory work, 20 % on administrative work and 10 % on obtaining information. The second

[8] Extensionists are usually agronomists, working either in public or in private extension services, or as independent professionals. Their role is to provide farmers with appropriate know-how regarding farming methods, as well as to be consultants in farm enterprises.

agricultural adviser spends 30 % of the time on administration, 20 % on advice on cultivation measures, 20 % on field experiments, 20 % on supporting schemes and 10 % on collecting information about agricultural policy.

Advanced training

Adviser W1 took part in a two-day international conference on organic viniculture. W2 attended one-day courses on cultivation, engineering, land planting and plant protection. The conferences mentioned were carried out by public agencies and the federal association for organic farming. L1 took part in two-day courses on support and subsidies, weed regulation, farm planning and on the economic evaluation of nature conservation areas. All these courses were carried out by public agencies. L2 did not take part in any course referring to organic farming. The main reasons quoted for their participation are professional duty, further education (twice) and personal interest (three times). All the advisers can freely choose which courses to attend.

Three of the advisers indicated that the courses tend towards higher efficiency in the field of organic farming. However, the courses attended by adviser L2 did not refer to organic farming, though important for his overall work, this does not hold for him.

All advisers subscribe to professional journals, motivated by relevance to work as well as private interest. The magazines *Ökologie und Landbau* and *Bioland* are about organic farming. *Agrarmarkt*, *Bauernstimme* and *Neue Landwirtschaft* deal with agricultural policy, marketing and current issues. The magazines *Deutscher Weinbau* and the *Weinmagazin* are professional journals for winegrowers. The adviser circular for organic farming deals with topics of particular interest for organic advisers.

Further need for advanced training

To grasp the message of the table that follows one must take the different fields of work of the advisers into account. The main emphasis of the agricultural adviser is marketing. The survey reveals that all the advisers receive requests for assistance in this field, with varying degrees of demand for assistance on cultivation techniques. One of the agricultural advisers deals mainly with the assistance provided by the Hessen agricultural support schemes, though for the two advisers for viniculture this topic plays a more subordinate role. Other important areas for assistance are farm management questions relating to variety, farm technology, different regulations and processing technology.

The interests of the individual advisers are quite broad. Plant protection, fertilisation, marketing and management are considered to be of major

importance and directly connected with their advisory work. General courses dealing with organic farming, environmental education and environmental protection are less important because the interviewees either already have sufficient knowledge or the topics are not relevant for organic farming. Irrigation is not a general issue for the enterprises in the regions concerned.

The Ministry of Agriculture (three times), research institutes (twice) and universities, boards of inspection and other practically-oriented organisers (mentioned once by each adviser) are quoted as the main providers of courses.

Future development of organic farming

Neither of the advisers on winegrowing anticipate future substantial increases in organic farming. Ecological wine is, and will remain, a niche product.

The advisors expect drastic changes for those farmers who have already converted their farms within the last few years, primarily in the field of marketing. Both advisers anticipate the same conditions for organic and conventional farming: the food industry will set prices and the quality of products. Cooperation between agricultural holdings will become more important in order to control supply and farmers will have to learn market orientation. One of the agricultural advisers considers the combination of a message with the product to be important – a product of need has to become a product of want. Agricultural products should be advertised more aggressively.

The role of the *ARLL* in this process is examined from different points of view. Its tasks are seen not directly in the inspection and certification process but only in the extension work. Good extension on cultivation methods would lead to good products and subsequently contribute to the protection of the consumers. Adviser L2 considers the provision of a quality standard system for the farmers to be the future. Adviser L1 demands more support for organic farming from the social partners, with agricultural employees tied into an advanced training programme, so that they know what to do and communicate it to the external market.

6.4.2. **The Greek case**

In Greece, each prefecture has a local office of extension services, which supervises agriculture, animal breeding and the fishery of the prefecture. A department of this office is the Office of Rural Development, staffed by agronomists extensionists. The role of the Rural Development office is to inform farmers about national and common agricultural policy, to provide them

with advisory and technical support and to undertake certain administrative functions (subsidies, funding, patterns for the improvement of agricultural enterprises, etc.), demanded by the directives and regulations of the EU.

From 1995 onwards a new department of organic farming has been established in each local office of extension services, the objective being the provision and development of organic farming in each prefecture. For the requirements of the present study we visited these departments in three prefectures of Central Macedonia (Thessaloniki, Chalkidiki, Pella) and carried out interviews with four extensionists.

The four extensionists are agronomists, permanent civil servants of the Ministry of Agriculture. They have attended several training courses and meetings organised by the Ministry of Agriculture and the Geotechnical Chamber of Greece and therefore are well informed about the new trends and aspects in the agricultural sector. Other sources of information for them are scientific journals and technical agricultural journals. The four extensionists provide advisory and technical support (plant protection, irrigation, fertilisation) to the following groups of farmers:

- arboriculturists/olive crop farmers;
- horticulturists;
- viniculturists;
- cereal crop farmers;
- rice crop farmers;
- beekeepers.

Their work is 30 % advisory and technical support, 30 % information provision and 40 % administrative work. Taking into account that their level of knowledge regarding organic farming may be improved, they expressed interest in training in the following subjects in order to be more efficient in their job:

(a) agricultural methods friendly to the environment (organic farming, integrated pest management);
(b) cultivation techniques (fertilisation, plant protection, irrigation);
(c) marketing of organic products;
(d) environmental protection from agrochemicals;
(e) consumer protection from agrochemicals.

They consider that universities, research institutes and the Ministry of Agriculture can organise training courses to meet demand and correct their lack of knowledge. Their opinion regarding the future of Greek agriculture is that organic farming can be widely developed, so long as there are proper production and inspection conditions, and marketing campaigns to increase consumer confidence in organic products.

The Office of Organic Farming should inspect and provide support in all production stages (soil, plant, product), to protect the consumer. However, organic farming offices should be properly staffed (with scientific and technical servants), in combination with the improvement of information provision and technical means. The role of the social partners in the inspection and certification of organic products and for the protection of the consumer should, according to the extensionists, be advisory and offer a coordination role at the European level.

6.4.3. **The Portuguese case**

The study interviewed four extensionists involved in extension education of organic farmers. These extension positions demonstrate the opportunities for graduates with a degree in higher education in agriculture.

Professional profile of extensionists

The biographical profile of this group indicates that three of four are male with an age range from 28 to 36. Two are employed by associations while the other two work as independent consultants. All of them have professional preparation in agricultural sciences in higher education institutions. Their degrees were awarded in 1990, 1991, 1993 and 1998. None of them has participated in post-graduate study. The majority of respondents have from 8 to 15 years' experience in organic farming. All of them believe that their agricultural knowledge fits with their present job position.

New trends, transfer of knowledge and information

The transfer of knowledge for these extensionists involves meetings and educational activities (in-service training). They identified the following types of activities for the exchange of ideas:

(a) meetings of the National Organisation of Agronomists (all four selected this activity);
(b) meetings of the Ministry of Agriculture (two of the four selected this activity);
(c) seminars of the Ministry of Agriculture (three in four selected this activity);
(d) national and international conferences (all four selected this activity).

The responses indicate an interest from this group for continuing education, with *Agrobio* identified as the principle association involved in training courses in organic farming in Portugal, for technicians and farmers. Additional organisations mentioned outside of Portugal were a Spanish University and the Chamber of Commerce of Costa Rica. Also, *Agrobio* is associated with training courses offered by the General Directorate for Rural

Development. This report will concentrate on the short courses implemented by *Agrobio* as the primary choice for Portuguese organic farming technicians.

Professional training (in-service)

Short courses in the area of organic farming attended by these extensionists were normally of 35 hours duration. A course entitled, 'General organic farming' attended by the majority of these actors indicates its importance in a series of short courses. An integrated pest management course (alternative agricultural practices) of 98 hours is also offered by *Agrobio*. Motivation to attend these short courses comes from obligation - for their work - as well as a personal interest. They were unanimous in the opinion that the short courses contributed to their effectiveness on the job.

An alternative information source on organic farming practices identified by two of the interviewees were magazines or journals. They subscribe to '*Alter-Agri*', '*Ecology and Farming*', and '*Biopresse*'. Informal education or self-learning contributes to their continuing education as extensionist in this area. Interestingly, the extensionists with more years of experience in organic farming have chosen to subscribe to these information sources. The initial challenge for these professionals was the lack of training courses and preparation at the higher agricultural education level. For this reason, self-learning can play a role in organic farming preparation.

Time spent performing functions within knowledge transfer

The average amount of time spent by these agents in advising and supporting farmers is 59 %, while 30 % of their time is involved in training. The rest of their time is devoted to research linkage (5 %), management (2 %) and informing the farmers about European agricultural policies (4 %). The number of visits to organic farms depends on the growing season; weekly or punctual, depending on the needs of the agricultural production enterprise.

The major questions from organic farmers for these agents relate to technical advice about fertilising and plant protection, as well as irrigation. Questions addressed to farm management issues are not common. Perhaps farm management questions are the responsibility of other technicians or these farmers do not need this type of advice. These farmers also have questions about subsidies and the commercialisation and marketing of their organic products.

The extensionists' consultative work at times requires assistance from people who perform the role of subject matter specialist. On average they contact a subject matter specialist as follows:

(a) the Ministry of Agriculture - one to six times per year;

(b) research institutes - two to three times per year;
(c) universities - the majority of the agents interviewed do not make contact, while one made contact four times per year.

They also use the advice of colleagues (agronomists), attaining about one contact per month.

Training needs of extensionists

The extensionists were asked to rate the importance of specific themes in improving their extension educational capacities or skills. The themes with the highest mean average were technical fertilisation issues in grape production and environmentally friendly farming methods. This can be interpreted as a keen interest in training courses within alternative agriculture, which obviously includes organic farming.

The institutions selected by these extensionists for the training courses were the Ministry of Agriculture, universities and farmer associations. In some cases, one of the criteria for selection would be whether or not the institution had organic farming experimental plots or demonstrations.

6.4.4. **The Spanish case**

Interviews were conducted with four advisers – all men – of the regional offices for farming and landscape management. Three of them are permanent (full-time) and one is an hourly wage expert (part-time). They are graduates and specialise in breeding, crop cultivation, horticulture, and plant production. Two of them have attended graduate studies for the role of agrarian enterprise assessor and agrarian extensionist. Most of them have participated in educational/training activities such as meetings and seminars conducted by the Ministry of Agriculture, the National Organisation of Agronomists (syndicate) and the Agrarian Department of the Catalonian government (*DARP*).

Extensionists have attended seminars (training courses) in the field of organic farming during the last five years, with specific training on organic agriculture, organic farming methods, and marketing of organic products. These courses were obligatory from their services; however, alternative motivation for involvement in these activities was promotion and personal interest.

In all cases the most frequently-asked questions from farmers in this area are about technical advice (fertilisation, plant protection, irrigation) and funds and subsidies.

The interviewees believe that the Ministry of Agriculture, universities, research institutes and organisations for control and certification of

agricultural products are the most appropriate to organise seminars and training courses related to organic farming.

The future of organic agriculture is considered to be promising by extensionists, but it requires technical and financial support in combination with structured marketing. In addition to the process of control and certification of organic products and consumer protection, the role of the local public agricultural services of the Ministry of Agriculture should include the improvement of information supply on organic agriculture, product quality guarantee and the improvement of inspection and certification systems.

6.4.5. **The Dutch case**

In the branches of organic wine and fruit juice production in the regions studied in the Netherlands, public agricultural extension services are not involved in activities at company level. Both branches are rather small branches and the public extension services focus their activities primarily on the larger branches of conventional agriculture.

Extension services for organic farmers are mainly provided by private individuals working as independent consultants. They are connected to the local networks of organic producers through durable, contractual relationships. These consultants (in one case a qualified agronomist, in another case a self-learned professional expert, both middle-aged) also fulfil a role as coordinator of parts of the local networks. As such they provide advisory and technical support (running of the businesses, marketing of the products) to the farmers and processing companies in their area and maintain internal contacts within the networks as well as external relationships and agencies (for instance local authorities, research agencies and schools). In one case, the consultant's bureau carried out part of the administration for the associated producers. In addition, they provide the network members with (new) information regarding, for example, new cultivation techniques, new ways of marketing of products, new policy directives and regulations. They organise regular meetings and (study) conferences for members of the network.

Their major sources of information are professional literature, journals, magazines, relevant sites on the Internet, plus their personal contacts with experts inside and outside the networks. In order to be able to do their job well, they stress that they need to be adequately trained in issues regarding cultivation techniques, though they do not have to be technical specialists themselves. Furthermore, they stress the importance of adequate qualifications in fields like business administration, marketing of organic products, consumer protection and (policy) regulations regarding organic

agriculture. They see the development of specific markets and adequate distribution channels for organic products as major challenges of the years to come. In particular, as they see it, the establishment of good, direct producer-consumer relationships, based on product quality and demand from consumers, could be an important stimulus for the sector. Furthermore, they think an increase in (public) investment in the organic sector is necessary if the government wishes to see substantial growth in organic agriculture in the next five years. Expenditure in the organic sector, for instance for research and development, education, information services, and support of farmers new to this area, is actually far behind expenditure in the conventional agricultural sector.

6.4.6. **Comparative results of extensionists**

The main results obtained from the analysis of the interviews with extensionists in the five countries are presented in table 6.4.6.1. Extensionists may be civil servants, employees in farmers' association or independent consultants. In four countries extensionists are agronomists, whereas in Germany they may have graduated from Home Economics departments. All the interviewees have attended training courses and seminars, participated in meetings and conferences either at national or at international level. Their major activities are:

- advisory and technical support (in all the five countries);
- information provision (Germany, Greece, Portugal, the Netherlands);
- administrative work (Germany, Greece, the Netherlands).

Extensionists are interested in attending training courses on practices and methods of organic farming, covering topics such as protection, irrigation, fertilisation, marketing of organic products, and training in consultancy skills. Their demands reflect those of the organic farmers.

Extensionists consider the most important difficulties in future development of organic farming to be:

(a) marketing and distribution;
(b) the lack of a quality standard system (in all countries except Portugal).

Table 6.4.6.1. **Results obtained from extensionists' interviews**

	Germany	Greece	Portugal	Spain	The Netherlands
Extensionist profile					
Level of education					
• Agronomist	x	x	x	x	x
• Home economics	x				
Advanced training					
• meetings		x	x	x	x
• seminars/courses	x	x	x	x	x
• conferences	x	x	x		
Sources of information					
• Journals/magazines	x	x	x	x	
Employment					
• as civil servant	x	x		x	
• by association			x		
• as independent consultant			x		x
Local office of Extension Service	x	x		x	
Activities					
• advisory & technical support	x	x	x	x	x
• information provision	x	x	x		x
• administrative work	x	x			x
Training needs					
• agricultural methods friendly to the environment		x	x		
• cultivation techniques issues (protection, irrigation etc.)	x	x	x	x	x
• marketing of organic products	x	x		x	x
• consumer protection		x		x	x
• environmental protection	x	x			
• environmental education	x				
• processing technology	x				
• farm technology	x				x
• regulations	x			x	
• consultancy skills					x
Future development of organic farming should be focused on					
• marketing	x	x	x	x	x
• more extension in cultivation methods	x		x	x	
• introduction of a quality standard system	x	x		x	x
• support from social partners	x	x			

Source: Questionnaires

BEST COPY AVAILABLE

6.5. Interviews with key people in innovation transfer and knowledge dissemination

6.5.1. **Directors of agricultural training centres in Germany**

In Hessen there is only one technical school for viniculture, which is affiliated to the viniculture office in Eltville. The extension worker of the viniculture office in Eltville offers courses and training for vine growers. There are special courses on offer for organic viniculture organised by the viniculture office together with regional groups of the federal association for organic viniculture (*BÖW*). The courses provide a basis for exchanging experience, gaining information about specialities, and current problems.

The content of the training courses is determined by the teaching curriculum of the Ministry of Agriculture of Hessen, agreed by the Ministry of Education. However, the teachers exert a decisive influence on the curriculum by giving ideas and suggestions to the ministries at the conference of teachers. Both directors indicated a need to direct the courses more to the problems and needs of the farmers. Personal opinions of the director and teacher are mentioned at one school as another influencing factor. At the other school, the local needs of agriculture and marketing problems are taken into account in the formation of the training programme.

Theoretical training makes up 95 % of the total training whereas practical training remains on a fairly low level with only 5 % at one of the schools investigated. This proportion varies with different courses. For instance, in EDP and economics a high proportion of practical teaching is given.

No special courses in organic farming were offered during the last five years. The curriculum of the centre integrates the field of organic farming into other subjects. However, the technical school for viniculture offers one course in organic farming of one hour per week. At the technical school for agricultural economics in Darmstadt aspects of organic farming are included in some subjects. However, there is no special course for organic farming due to the negative attitudes of conventional farmers towards this subject. The proportion of organic farmers is only 5 to 10 % per year, i.e. in each class there are one or two farmers from organic farms.

According to the opinion of the teachers, farm workers take part in training courses very rarely, though exact figures cannot be given.

6.5.2. **Directors of agricultural training centres in Greece**

Agricultural training centres (*KEGE*) are under the supervision of the Ministry of Agriculture (from 1.1.2000 agricultural training centres are supervised by a new Ministry body: the Organisation for Agricultural Professional Education, Training and Employment - *OGEEKA*) and offer initial and supplementary training of 150 to 300 hours to farmers and their families. Two directors of agricultural training centres in Thessaloniki and Chalkidiki prefectures were interviewed for the requirements of the study. They are agronomists, permanent civil servants of the Ministry of Agriculture. Their professional duties include:

(a) drawing up yearly programmes for initial and supplementary training for farmers, in collaboration with the director of the local extension service of the Ministry of Agriculture in the above prefectures;
(b) finding trainers from research institutes, experts from the Ministry of Agriculture, university staff;
(c) evaluating the specific training needs of farmers in their region and submitting their proposals to the Ministry of Agriculture.

According to the two directors, the evolution of scientific knowledge, changes in technology and the new trends in the CAP, combined with the consumer needs and preferences, demand education and training reforms.

The evaluation of farmers is both internal (tests by each trainer) and external (by experts from the Ministry of Agriculture). On completion of the training programme, farmers receive a certificate (attendance certification).

The training course consists of theoretical lectures (75 % of the programme) and practice (25 % of the programme). To date, the two agricultural training centres (*KEGE*) have not organised training courses on organic farming. However, environmental issues related to agriculture (such as integrated pest management, organic farming) are included as units in other courses of plant and animal production.

People who attend training courses are farmers and women from 20 to 39 years old. Therefore, according to European legislation, these young farmers are eligible for subsidies for investment in their enterprises. Among 2000 farmers who attended training courses in recent years, about 1 % became organic farmers.

Finally, it has to be mentioned that agricultural training centres (*KEGE*) in Greece do not organise training courses for farmworkers. This results from the small size of agricultural enterprises and is a barrier to farmworkers seeking permanent work. *KEGE* do not either collaborate with any special network for providing information to farmers. However, they organise meetings in collaboration with trained farmers, for information and exchange of opinion.

6.5.3. **Directors of agricultural training centres in Portugal**

Three centres were specifically selected for interview because of their training programmes in organic farming. These centres administer and organise training for farmers and other rural groups interested in various aspects of agricultural and rural development. They then, in many cases, contract trainers to teach the short courses. Often, these trainers are contracted from associations and universities.

Two of the centres have recently started to organise and administer organic farming training with teaching assistance from other institutions. The *Agrobio* association was identified as the dominant institution organising organic farming training for technicians and farmers in Portugal (beginning in 1985). This institution uses some of its own teaching staff for training programmes, as well as contracting additional human resources from other organisations; these may be Portuguese or from other European sources.

Two of the directors at these centres have degrees in agriculture and the other a degree in sociology. All were born in the 1960s and completed their degrees in the late 1980s or early 1990s. One of the directors has completed a Master's degree in plant sciences.

The training centres' staff indicated the ratio between professional (young farmers) and continuous training (farmers). Two of these centres usually implement continuous training programmes and one works in the professional training sector. Only one of the centres has been involved in training both farmers and technicians. This centre has been involved in training since the 1980s.

The directors identified the following factors as important reasons for reform in educational activities associated with both environmental and organic practices:

- an increase in innovative technology;
- an improved awareness among farmers of the profit margin in organic farming practices;
- a change in the needs of consumers;
- an alteration in CAP trends and European regulations;
- changes in the methods and means for teaching.

The needs assessments for these training activities are dominated by an interest in producing healthy products for the consumer. The programmes are also developed by surveying the needs and problems of farmers, which includes the marketing of their products. Additional influences on training curriculum development are local agricultural needs and the norms and directives from the Ministry of Agriculture. The promotion of the short courses is the responsibility of the centres and the farmers' association related to the

centre. Contact with potential participants in the short courses is via personal letters, through contacts from centre staff, local extensionists, members of the local government and in response to farmers' expressed interests during the needs assessment process.

The trainees are given the opportunity to evaluate the training activities of the centres at the end of the short course. The more experienced centre has also been involved in an external evaluation. All of the centres offer a certificate to the trainees that complete the criteria of the short course.

The short courses have a mix of theoretical and practical classes. In terms of the percentage of training time, the practical dimension can range from 40 to 60 %. Two of the most recently established centres only began training courses for organic farmers in 2000, while the oldest established centre has had training courses since the late 1980s.

There are no short courses offered at these centres for agricultural workers. All trainees receive a subsidy for attending these short courses. These centres design and organise the short courses, but rely on trainers from other institutions for teaching.

6.5.4. **Directors of agricultural training centres in Spain**

The directors of two schools were interviewed. One was the vocational agrarian school of Manresa and the other Les Borges Blanques, in Catalonia. Both schools are approximately 25 years old but Les Borges Blanques has double the number of workers (14) of Manresa (7). The teachers are agrarian engineers, agrarian technicians, biologists, social science graduates and instructors.

The training programmes are organised mainly according to the local needs in agriculture, determined by the Ministry of Agriculture, as well as by taking into account farmers' and consumers' problems and needs. Responsibility for the formation of the training programme in each centre lies with the director of the training centre, in collaboration with the director from the local service of the Ministry of Agriculture. The agrarian department and the training department of the Ministry also influence the formation of the training programme. In both cases the centres apply an evaluation system every three months to the students, including two evaluation processes. When the trainees pass the exams, they receive a certificate.

The system for providing farmers with information about future training courses to be implemented by the centre works through a number of possibilities:

(a) farmers themselves express interest in the training programmes;
(b) personal invitations are sent;

(c) the agronomists of the local public agricultural services are informed;
(d) the community office of the village is informed;
(e) the staff of the centre take the responsibility to inform farmers.

In addition, one centre uses the publicity by agrarian syndicates.

Both schools spend 40 % of the time on practical training. The other 60 % is spent by one school in theoretical training while the other spends 40 % in theoretical training and 20 % in technical visits.

The organic farming training courses organised by the centres are:
(a) introduction to organic farming (with 20 students each year);
(b) entry of young people into the agricultural profession (with 30 to 52 students);
(c) organic plant protection methods (with 20 students each year);
(d) fruit farming (with 20 students each year);
(e) breeding (with 20 students each year);
(f) organic viticulture (with 20 students each year).

Of the trainees participating in organic farming courses, about 10 % actually become involved in organic farming.

The studied centres participate in a European project with the *Centre Licée Agricole de Côté de Saint-André* and in the *DARP: Xarxa de serveis de capacitació agraria* (a Catalonian organisation). Additionally, they participate in a continuous networking programme for farmers regarding:
- management;
- technology;
- marketing;
- professional recycling;
- women in agriculture;
- rural development;
- entry of young people into the agricultural profession.

6.5.5. **Directors of agricultural training centres in the Netherlands**

In the wine and fruit juice industries in the regions studied innovation transfer and knowledge dissemination occur in different ways. A characteristic of both sectors is the highly informal character of development and dissemination of (new) expertise. In the wine sector, certain pioneering vineyards/wineries play a key role in this process. In the fruit sector the producer cooperatives have developed their own internal systems. However, formal training agencies are also active in both sectors. The Winegrowers Guild, the professional association of Dutch winegrowers, provides formal training, though not specifically in organic wine cultivation. The biodynamical training centres of *Warmonderhof* and *Kraaybeekerhof* have recently started training

activities for fruit growers. The sectors are discussed separately below.

Two pioneering vineyards/wineries, run by the same cultivator, are important for innovation, expertise development and dissemination in the organic part of the Dutch wine industry. This cultivator is one of the main experts and promoters of winegrowing in the Netherlands. He has prolonged contacts with pilot-stations in traditional wine-countries like Germany and passes on innovations from these countries to the winegrowers of the Netherlands. A part of his vineyard is worked in a conventional way, but on an ecologically friendly basis. In another part he tries to work in a fully biological manner and experiments with organic methods of fertilisation, plant protection, weed killing, etc. His vineyard has, in fact, become an important 'training centre' for newcomers to wine cultivation. A special training course for newcomers to the business is organised regularly at the farm. The course, which is certified by the Dutch Winegrowers Guild, is given in the vineyard itself. Its total duration is six days, though these are spread over the whole year. The course plan follows the plan of activities in the vineyard:

(a) late winter: theory, planting and cutting of vines;
(b) early spring: breaking out of young sprouts;
(c) late spring: binding up and thinning of the vines;
(d) summer: working with protection products;
(e) late summer: recognising and handling of diseases;
(f) autumn: harvesting and processing of grapes.

The course has both theoretical and practical sections. Participants are encouraged to apply their new knowledge directly in practice in their own vineyard and to evaluate the results during the course. The course addresses two target groups: amateurs and people who want to start a commercial vineyard/winery. The latter group follows a number of extra specialist modules, e.g. on subjects like mechanisation, vinification, etc. At the moment, there are already approximately 500 certified cultivators. The course is an initiative of professional growers. There is no formal cooperation with conventional extension services or vocational training agencies, nor with the organic training centre of *Warmonderhof*.

There is, however, intensive cooperation with the professional association of the Dutch Winegrowers Guild. The cultivator was one of the initiators of the guild. This guild itself also plays an important role in the dissemination of expertise in the Dutch wine industry. It does so by distributing a special magazine, organising regular meetings and conferences of winegrowers and distributing all kinds of information through its Internet-site. In addition, the guild organises a supply of training courses for formally recognised wine certificates in the Netherlands:

(a) basic courses of a number of weeks for the 'wine certificate' and the 'wine brevet';
(b) a specialist course of one year for the certificate of 'vinologist', the highest formal wine qualification in the Netherlands.

This last course includes theoretical study and practical elements done alone. Courses are given at several locations in the Netherlands, on a fee basis. The trainers are professionals in the field and also expert cultivators and managers of wineries. Sometimes external trainers are hired, for instance from French or German wine academies. Part of the course might also be an excursion to vineyards/wineries in the traditional wine countries. The Winegrowers' Guild has a close relationship with the Wine Information Centre, a major information and consultancy centre of the Dutch organisation for wine production.

The organic sector of the fruit (juice) industry has organised the development and dissemination of expertise largely in its own (informal) way. Recently, however, the organic agricultural training agencies of *Warmonderhof* and *Kraaybeekerhof* have developed a supply of training courses for new organic fruit farmers and conventional fruit farmers who want to convert to organic farming. Both *Warmonderhof* and *Kraaybeekerhof* offer both initial training and further supplementary training and short courses. The initial programmes at *Kraaybeekerhof* are part of the apprenticeship system and recognised by the government. The programme consists of one day per week theory at school and four days a week working at a biodynamic farm. Organic fruit cultivation is a specialisation in the later years of the initial curriculum.

Warmonderhof and *Kraaybeekerhof* also offer special training courses, consultancy and promotional services, e.g. training in entrepreneurship for organic farmers, summer courses and workshops on different aspects of biodynamic agriculture. *Kraaybeekerhof* organises conversion courses, e.g. special courses for conventional farmers who want to step over to biological agriculture. These courses have been developed at *Warmonderhof*, but they are open to students from outside and given at different locations in the Netherlands. Usually, such courses are subsidised by local authorities in the framework of subsidy schemes for the stimulation of conversion to biological farming. Participants get a special certificate when they complete the course.

Kraaybeekerhof itself employs only two teachers, but it shares other teachers with *Warmonderhof*. Most of these are graduate biologists. They are hired by *Kraaybeekerhof* to give specific modules of shorter training courses. A group of free-lance trainers are also used for these shorter courses. These trainers an have a very different background and education. Some of them

come from agriculture itself. Others are self-taught experts in specific fields, such as herb growing and flower cultivation. Sometimes, research experts are hired from universities and specialised research institutes in organic farming, like the Louis Bolk Institute for biodynamic agriculture. There are no formalised cooperative relationships with the public extension service.

6.5.6. Comparative results from interviews with directors in agricultural training centres

The study of key people in innovation transfer and knowledge dissemination shows variation among the five EU countries. Each country has developed a different system to cover the needs of the agricultural population. Based on table 6.5.6.1 the main results can be summarised to the following:

(a) directors in agricultural training centres have a bachelor degree in agricultural sciences, or, in some cases, they may be sociologists, biologists or teachers. In Germany, Greece and Portugal directors are civil servants;

(b) agricultural training centres provide initial and supplementary training in short courses (Germany, Portugal, the Netherlands);

(c) the training system for innovation transfer and knowledge dissemination involves lectures on theory and practical exercises which exist to varying proportions in different curricula (in Germany and Greece the larger percentage of a training courses is covered by lectures, whereas in the remaining countries there is an equal distribution between theory and practice);

(d) trainers for the above courses belong to several professional sectors, depending on the country: universities, research institutes, associations, etc.; in Germany, Spain and the Netherlands agricultural training centres employ teachers a permanent basis;

(e) evaluation of trainees is both internal (provided by ATC trainers) and external (provided by experts from universities, the Ministry of Agriculture, etc.) (Greece, Portugal, the Netherlands);

(f) training courses focused on organic farming are limited, whereas in Germany and in Greece, the ATC have not organised yet organic courses relevant to organic farming, usually incorporating environmental issues in other training courses;

(g) finally, cooperation between the ATC and local extension services, technical vocational agricultural schools or other bodies of local and rural development has not been formalised.

Table 6.5.6.1. **Results obtained from the interviews with the directors in agricultural training centres**

	Germany	Greece	Portugal	Spain	The Netherlands
Directors profile					
• Agronomist	x	x	x	x	
• Sociologist			x	x	
• Biologist				x	x
• Teachers				x	
Civil servant	x	x	x		
Agr. Training Centres offer					
• initial training	x	x	x	x	x
• supplementary training	x	x	x	x	x
• short courses	x		x		x
Training system					
• Courses/network				x	
• Theoretical lectures (%)	95	75	60-40	60-40	60-40
• Rehearsal (%)	5	25	40-60	40-60	40-60
Trainers from					
• Federal associations	x		x		
• Research institutes		x	x		
• Ministry (experts)		x			
• Universities		x	x		x
Permanent employed teachers	x			x	x
Evaluation					
• Internal	x	x	x	x	x
• External		x	x		x
Training in organic farming					
• Training courses in organic farming			x	x	x
• Environmental issues are included as units in other training programmes	x	x			
Cooperation with					
• Local extension service		x		x	
• Technical vocational agricultural schools					x
The participants attain a					x
• certificate		x	x	x	
• degree as certified economist	x				
• degree as certified business economist	x				

Source: Questionnaires

BEST COPY AVAILABLE

6.6. Interviews with teachers from high schools and from technical vocational agricultural schools

6.6.1. **The German case**

Teacher in high schools

Interviews were carried out with two teachers for biology from two different schools. The interviewees were one woman and one man, aged 50 and 42 and employed on a regular basis. Whereas one of the teachers had worked for 17 years at his school, the other one started only one before. Both studied biology and one of them also chemistry. Their studies at university were completed between 1981 and 1984. One of the teachers did a PhD thesis in the field of virology.

Personal interest was quoted as the main motivation in taking part in advanced training schemes. Their training is conducted via workshops and courses on orchading and forestry.

They teach biology and chemistry; additionally one of them teaches geography and religion. Environmental education is included in the teaching curriculum at both schools, covering the following topics: ecological relationships; knowledge of species and species mapping; environmental damage and protection; forestry; soil science; and lessons about ozone. Field trips, theoretical lessons, project-related work and free experimentation were mentioned by both teachers to be the main methods of teaching.

Both teachers believe that knowledge of environmental topics is very important, with the interest among pupils estimated as medium to high. However, one of the teachers comments that this does not have any effect on the behaviour of the pupils.

Both think that there is value in participation in courses on current themes and rate all of the courses mentioned as important. While both teachers regard the course on environmentally friendly cultivation methods as very important, one of the teachers believes the courses on consumer protection and on European aspects of humans and the environment to be of average importance.

Teachers in agricultural schools

Two schools were chosen, with one teacher in each being interviewed. One of these schools is the vocational school for viniculture in Geisenheim. The other one is the agricultural technical school in Darmstadt, were farmers can obtain higher qualification. Both teachers are employed permanently.

BEST COPY AVAILABLE

After their university degrees in agriculture (crop science), both qualified as teachers. As preconditions for becoming a teacher in Germany it is necessary to study pedagogy at university, to have a period of practical training and to do the first and second examinations set by state-run examination boards.

Both teachers participated in courses in the preceding five years, focusing on nature conservation and organic farming, as well as advanced pedagogic training. The seminars were offered by state institutions and private organisations as *AGÖL* and *AID*. The duration was between two days and three weeks. The main reason for voluntarily participation in the courses was he beneficial effect of training for their profession.

At present the two interviewees have been employed at agricultural schools for 3 and 13 years respectively. The interviewee from the agricultural technical school in Darmstadt teaches plant cultivation, EDP, agricultural policy, market doctrine and process engineering. The other, from the vocational school in Geisenheim, teaches at two schools: a complete course for vine growers at the vocational school as well as agricultural economy, cellar housekeeping and occupational mathematics for a technical college. Both teachers believe that the tuition at the schools is adapted to the needs of the modern farming. The following subjects are compulsory elements of the curriculum: the conservation of nature; environmentally friendly cultivation methods; organic farming; and protection of humans against pesticides. In addition, diet and hygiene are on the teaching curriculum of the vocational school in Geisenheim.

The teaching curriculum of the vocational school does not include courses on organic farming; this aspect is not even planned. However, the target of the school is to pass on environmentally friendly farming methods, which are similar to the methods used by organic farmers. Furthermore, there is no organic farm to receive training in that region and so there is no direct need. Education in organic farming at the agricultural technical school in Darmstadt comprises basic principles of organic farming, cultivation techniques, business management and marketing, as well as legal and organisational aspects.

Both teachers see value in participation in courses on current topics. Environmental education, plant protection, the quality of agricultural products and the protection of consumers are of special importance for them. The diet value of agricultural products and European aspects of humans and the environment are regarded as of minor importance.

At both schools the relationship between the school and the environment is emphasised by visits to agricultural enterprises and practical exercises. The agricultural technical school occasionally offers lessons by farmers. In

addition relationships are maintained through a study group with farmers, an association of former pupils, extension work, and by offering courses to outsiders. Cooperation with the department of viniculture and the research institute in Geisenheim take place at the vocational school. The pupils receive testimonials once or twice per year and regular examinations are performed. At the vocational school the examination is carried out through external resources. The agricultural technical school is inspected by the administrative office of Hessen.

6.6.2. **The Greek case**

Teachers in high schools

One agronomist and one naturalist were interviewed, both permanent staff of the Ministry of Education. Both have attended postgraduate studies in teaching methodology and pedagogy plus a number of seminars chosen out of personal interest. They have a belief in the importance of education on the environment for students and the general public and so they participate voluntarily in environmental education projects outside their working hours. These projects include practical work and training excursions/visits since students are willing to be involved in environmental activities.

Teachers in high schools are interested in attending courses or seminars related to the quality of agricultural products, consumer protection, issues on European matters and initiatives on human actions and the environment.

Teachers in technical vocational agricultural schools

Two interviews were conducted with permanent teachers in technical vocational schools in the Thessaloniki prefecture. Both are agronomists, one specialising in plant production and the other in animal production. Both have attended postgraduate studies in pedagogy and teaching methodology plus courses in the school curriculum. The plant production teacher teaches management of natural resources, principles of environmental sciences, and elements of architecture. The teacher of animal production teaches processing of animal products and hygiene in the labour environment.

Aspects covered in the above courses include:

(a) environmental protection;
(b) environmentally friendly agricultural activities;
(c) human protection from agrochemicals;
(d) health and nutrition.

The purpose of these courses is to increase student awareness of environmental issues. The means and teaching methods used are lectures, discussion and teaching in groups. The curriculum of the school also includes

a special course on organic farming and animal breeding (including sections about basic principles and economics and marketing perspectives of organic products).

The teachers see an increasing interest among students – after their graduation – in becoming organic farmers or animal breeders.

The teachers concede that they lack knowledge in several areas of the environment and organic farming and are willing to attend courses on:

(a) environmental education;
(b) organic farming – animal breeding;
(c) quality of agricultural products;
(d) consumer protection;
(e) marketing of organic products;
(f) European dimensions and initiatives on the environment.

The teachers gather information on new perspectives and progress in the agricultural sector mainly from lectures provided by agronomists, experts from the Ministry of Agriculture, professors from universities, researchers, etc. and from brochures and leaflets.

The school's connection with the agricultural environment (farmers, farm workers, etc.) is provided through:

(a) student practical exercises in modern agricultural enterprises;
(b) visits to modern farms;
(c) meetings organised at school, with the participation of farmers, agronomists, etc..

The evaluation of students is carried out by means of examinations (tests and final exams), although experts from the Ministry of Agriculture evaluate the practical programme of the school.

6.6.3. **The Portuguese case**

Teachers in high schools

The majority of the ten teachers interviewed are responsible for disciplines in biology and geography. This sample of teachers was made up of primarily female teachers (90 %) with a range in age from 30 to mid 40s. All of them are full-time staff and have an undergraduate degree in biology, geography or geology. Only one of the teachers has completed a master's degree in the area of rural development and extension. None of them has participated in short courses or seminars involving organic farming. The range in experience as a teacher extends to 20 years.

The areas covered by their educational programmes include topics such as conservation of natural resources, organic farming, recycling materials, environmental degradation, impact of human beings on the environment,

atmospheric pollution, consumption of natural resources, deforestation and pollution of water sources. The teaching methods and techniques used by these teachers included the following: horizontal and vertical dialogue; debate; group work; field work; lectures; field trips; constructive discussion and individual exercises.

The questionnaire also allowed the teachers to indicate the degree of importance of various environmental themes to improvement of their teaching abilities through training courses or seminars. All of the themes suggested would be useful for improving the teachers' capacities to teach the important issues within environmental education. There is an obvious gap in environmental issues and problems that need to be addressed in order to improve the teaching capacities of these teachers.

One of the interpretations of these results is the necessity for training in environmental issues and problems from this sample of teachers. In order to stimulate greater adaptation of the environmental curriculum, the instructional directors at these schools need to stimulate teachers to incorporate in their teaching the basic concepts, ideas, issues and problems surrounding environmental education. It is also obvious that training must accompany the educational policy of the Ministry of Education. The pedagogical skills used by these teachers appear to be diverse by the variety of methods and techniques identified in the questionnaire. It might be of value to determine an ideal list of methods to be used in the teaching of these themes in environmental education.

The teachers believe that the students have a high interest in environmental problems. This is a further incentive for a parallel action for in-service training of teachers in environmental issues and problems by the Ministry of Education, universities, teaching colleges and training centres.

Teachers in vocational agricultural schools

The professional biographical data of the teachers interviewed describes them as predominantly male, with a range in age from 30 to 49. They are all permanent staff at their institution and three of the four have a B.Sc. (this B.Sc. in Portugal is a five year programme). Two teachers have also participated in additional pedagogical training. They completed their degrees in the area of agriculture in the 1970s and 1990s. Two of the four teachers began a master's degree in agriculture, but gave up after two to three months. These teachers have been teaching at their schools from five to ten years.

All of the teachers believe that the curriculum prepares students with adequate skills for modern agriculture. They are responsible for disciplines in the area of viticulture, fruit production, economics and associations, crop

science, horticulture, soils and climates, transformation and marketing of agri-products, and beekeeping. Three of the four schools have offered training courses relative to the protection of the environment, farming methods friendly to the environment and human protection from agrochemicals. None of the schools offers a training course in organic farming.

The teachers rated student awareness on environmental issues as moderate. Yet, at the same time, they all believe that their school has contributed to increased awareness of environmental issues for their students. This is accomplished by integrating environmental issues into the courses entitled: crop production; agricultural management; management of the environment; and management of green spaces. The educational methodologies used for this training are practical classes, group work, seminars, conferences and supervised work experience.

There is no specific course in organic farming at these schools. Yet, all of the teachers believe that organic farming should be included in the curriculum in the future. Three in four believe that the school farm would be adequate to offer practical training for their students. At the present time, the practical training offered by these schools would not be sufficient for their students to be effective in an organic enterprise (only one teacher disagreed with this statement).

All teachers think it would be useful to attend short seminars or training courses on environmental issues. The theme with the highest mean average was organic farming, followed by integrated pest management, environmental education, and the nutritive value of agricultural products and human nutrition. This can be interpreted as a keen interest in training courses in alternative agriculture, which obviously includes organic farming.

The interview established that the teachers use brochures and printed material to keep up to date on new trends in agriculture. Three of the four teachers used additional sources of information, identifying:

- teachers from other similar schools;
- agronomists;
- university staff;
- experts from the ministries.

All of them identified the Internet (new information technology) as a source of information on new trends.

The teachers pointed out that all of the schools have agricultural work experience programmes with modern agricultural enterprises and agri-businesses. This experience programme is promoted not only to give the student practical experience, but to make employers aware of the competences of the students at these schools. Lectures from modern

farmers and seminars about the environment, inviting the local farmers, agronomist, teachers and experts to participate, were quoted as of value by two of the four teachers.

In two of these schools, the students evaluate the teaching programme and curriculum at these schools. However, at one of these schools there is a formal annual evaluation, while the other is left to the assessment of the teacher. Finally, two of the schools were involved in an external evaluation by the Ministry of Education or Agriculture.

6.6.4. **The Spanish case**

Four teachers, two women and two men, from three schools were interviewed. Three of them were permanent professors and one an hourly-paid teacher (the youngest). The two professors were biologists, one a philosophy graduate and the other an engineer. All of them have participated in seminars on organic agriculture and other themes such as:

(a) assessment of risk associated with the exposure to drugs and environmental pollutants;
(b) genetics;
(c) conference on indigenous plants;
(d) automated irrigation;
(e) management;
(f) environmental education;
(g) education and the environment in Europe;
(h) science across Europe;
(i) organic agriculture;
(j) ecology of small islands.

These courses have a duration of 16 to 60 hours. The reasons for participating in the above seminars were personal interest or to promote their career.

The main courses the interviewed teachers taught were:

- English;
- natural science;
- biology and geology;
- environmental science;
- crops;
- environmental management.

Environmental education is included in the analytical programme (curriculum) in all schools. More precisely, there are specific courses on ecosystems, ecology, the effects of human actions on the environment and questions about health and consumers.

The most usual teaching methods in the school are lectures, educational trips and the teaching in groups. All the teachers believe that knowledge of and student awareness of environmental issues is very important.

Environmental education, human actions and the environment, environmentally friendly farming methods and the quality of agricultural products are seen as the most important training courses though all the suggested courses are important for training students.

6.6.5. **The Dutch case**

The Dutch case focuses upon the specific centres for vocational education in organic agriculture. Complete educational programmes in organic farming can only be followed at the biodynamical agricultural school of *Warmonderhof* and the affiliated institute of *Kraaybeekerhof*. The certificates of *Warmonderhof* and *Kraaybeekerhof* are evaluated and recognised by the Department of Agriculture within the framework of the national vocational qualification structure.

Education at *Warmonderhof* is strongly influenced by anthroposofical principles. According to the dean of the institute, students come to *Warmonderhof* 'for a different way of looking at agriculture, for a different way of education and a different way of living, learning and working together. Besides, biodynamic agriculture requires a different way of thinking about nature, men, land, soil, plants, animals etc'. Environmental issues, like protection of the environment, agricultural methods friendly for the environment, organic methods of cultivation, fertilisation, plant protection, disease reduction and animal well-being are important elements of the curricula. Traditional subjects like biology and mathematics are taught in a more contextual and less analytical way compared to conventional agricultural education. A strong emphasis is laid on working in small groups of students. Initiatives from students themselves and self-reliability are strongly encouraged. The programmes are built up on a modular basis and consist of a combination of theoretical and practical education. For the practical part, *Warmonderhof* has its own companies, e.g. a number of farms, where different types of farming and gardening are conducted. Work experience periods are an important element of the programmes. Approximately 40 % of the total training time is allocated to such periods. Students are strongly encouraged to work in groups and conduct practical learning activities together.

Since the beginning of the 1990s the number of students per year at *Warmonderhof* has been stable at around 100 per year. In some respects, new students who come to *Warmonderhof* are different from those entering

conventional agricultural schools. Usually, they are a bit older (an average of 18 years versus 16 years) and better educated, with a higher general secondary education in stead of a middle level general secondary education. Many students come from anthroposofical schools, many of them come from a city-environment and do not have an agricultural background. They have usually chosen a specifically biodynamical education, because of their strong involvement with the nature and the environment. Around half of them are males, the other half females. Approximately 20 % of the students come from Belgium and Germany. Each year approximately 20 students gain their certificate. After study, most of them start work in biological agriculture, either on farms or in organic food shops. Some of them start their own business.

Currently, *Warmonderhof* has 13 teachers, 7 responsible for the school's farms and a small administrative and supportive staff. Most of the teachers are academics, graduated in biodynamic agriculture or biology at Wageningen University. Many of them have followed post-graduate studies and courses in (anthroposofical) teaching methodologies. They regularly attend seminars and courses to maintain their professional qualifications. This can no longer be done at Wageningen University, because here the unit for biodynamic agriculture has been closed. For their further education the teachers primarily have to rely on self-study.

Important sources of information on new developments are the professional literature and specialised professional magazines, newsletters, brochures etc. Furthermore, they regularly have contacts with the Louis Bolk institute, a major institute for biodynamical research in the Netherlands. This institute organises study days for teachers and there are several working groups, in which *Warmonderhof* teachers also participate. Another source of information is personal (international) contacts among teachers themselves, e.g. contacts with biodynamical institutes and associations in Germany and Scandinavia. Their training needs are particularly associated with issues such as (new) organic cultivation methods and (new) methods for organic plant protection and improvement of organic product quality.

As one of the teachers observes, thus far, the growing general interest in biological agriculture has not led to more students in organic farming at *Warmonderhof*. One of the reasons for this could be the diminished interest in a professional career in agriculture in general among the younger generation of agricultural youth. There appears even to be less interest in biodynamic agriculture. This tendency is also observed at *Kraaybeerkerhof*. Many new students are recruited not from the traditional agricultural field itself, but from larger cities, many of them at an older age. For them, the study is a kind of 'second-chance' education. They have already worked in other

fields (sometimes even as academics) and want to become re-educated in biodynamic agriculture. For these reasons, teachers expect that biodynamical education probably will stay a small segment in the whole of agricultural education over coming years.

6.6.6. **Comparative results for teachers in high schools**

The aim of the investigation is to detect structures – where available – in high school education intended to raise student awareness on environmental issues. The results are not very promising but the following points should be mentioned in relation to Greece, Germany and Portugal (for Spain and the Netherlands there are no available data):

(a) the teacher profiles differ between countries, with agronomists, biologists, chemists, geographers, geologists, etc., with postgraduate studies in teaching methodology and pedagogy;

(b) they are interested in environmental training, such as European dimensions and initiatives on human actions and the environment, consumer protection;

(c) environmental education is not included in analytical programme (curriculum) as a separate course; in Germany and Portugal a general approach to environmental issues is provided through courses related to natural and social sciences;

(d) in Greece, environmental education is voluntary, and takes place after school hours in project format.

Table 6.6.6.1. **Results obtained from interview with teachers in high schools**

	Germany	Greece	Portugal	Spain*	The Netherlands*
Teachers' profile					
• agronomy		x			
• natural sciences		x			
• biology	x		x		
• chemistry	x				
• geography/geology			x		
Postgraduate studies					
• Teaching Methodology	x	x			
• Pedagogic	x	x			
• PhD	x (one)				
• Rural development /extension			x		
Seminars/courses					
Training needs					
• quality of agricultural products		x			
• consumer protection	x	x			
• issues of European dimensions and initiatives about human and the environment	x	x	x		
Environmental education in the teaching curriculum					
• voluntarily for the pupils (environmental projects)		x			
• generalist approach (natural + social sciences)	x		x		
• topics in curriculum					
– ecological relationships/ natural resources	x	x	x		
– environmental damages/ protection/ soil science	x	x			
– recycling materials		x	x		
– pollution	x		x		
– environmental management		x			

(*) high school teachers were not involved in environmental education in the studied regions

Source: Questionnaires

BEST COPY AVAILABLE

6.6.7. Comparative results for teachers technical vocational agricultural schools

The role of technical vocational agricultural schools (TVAS) is to prepare farmers or employees for the agricultural sector. The contribution of these schools in provision of knowledge regarding organic farming, and the development of environmental consciousness is presented in Table 6.6.7.1.

The teachers' profile can be summarised as follows:

(a) teachers are graduates from agricultural universities in the four countries apart from Spain;
(b) they attended postgraduate studies in teaching methodology (Spain excluded), as well as training courses and seminars;
(c) they appear to have serious gaps in knowledge and information on organic farming, therefore they are interested in training courses on:
  (i) the quality of agricultural products – required by all the teachers surveyed;
  (ii) training to fill gaps in organic farming practices as well as in environmental education – quoted by all but Germany and the Netherlands;
  (iii) training in the field of consumer protection as well as in European dimensions and initiatives on the environment - from Germany, Greece and Spain;
(d) the main sources of information concern: brochures-leaflets and courses, seminars, exchanges with experts and colleagues and researchers.

The analytical programmes (curricula) of TVAS can be summarised as follows:

(a) in Greece and, in some cases, in Spain and the Netherlands specific courses related to organic farming are included in curricula;
(b) in all the five countries, several environmental aspects are included in specific courses, such as:
  (i) environmental protection;
  (ii) environmental friendly agricultural activities (Spain excluded);
  (iii) human protection from agrochemicals (Netherlands excluded);
(iv) organic farming practices (in Germany, Greece and the Netherlands).

Teaching methods focus on theoretical lectures and practical exercises, except in Germany which follows a dual system of teaching. Students' evaluation follows the formal annual evaluation (internal), except in Portugal where evaluation of the students is also provided through external processes.

Table 6.6.7.1. **Results obtained from interview with teachers in TVAS**

	Germany	Greece	Portugal	Spain	The Netherlands
Teachers' profile					
• graduate in agronomy	x	x	x	x	
• biology	x	x			
• engineering	x				
• philosophy	x				
Postgraduate studies					
• Teaching methodology	x	x	x	x	
• Pedagogic	x	x	x		
Seminars/courses	x	x	x		
Training needs of the teachers					
• Environmental education	x	x	x	x	
• Organic farming	x	x	x		
• Quality of agricult. products	x	x	x	x	x
• Consumer protection	x	x	x	x	
• Marketing of organic products	x				
• Environmental dimensions and initiatives in the EU	x	x	x		
Teachers information sources					
• Courses/seminars/ exchanges with experts, researchers, professors from univers., etc.	x	x	x	x	
• Brochures-leaflets	x	x	x	x	x
Environmental education and training in the school curriculum					
• Management of nat. resources	x				
• Principles of environmental sciences	x	x			
• Hygiene of labour environment (animal production)	x	x			
Environmental issues					
• Environmental protection	x	x	x	x	x
• Environmentally friendly agricultural activities	x	x	x	x	
• Human protection from agrochemicals	x	x	x	x	
• Healthy nutrition	x	x			
• Organic farming	x	x	x		
• Animal breeding	x	x			
• Marketing perspectives of organic products	x	x			
Teaching methods					
• theoretical lectures	x	x	x	x	x
• practical training	x (dual)	x	x	x	x
• group work	x	x			
Evaluation					
• Formal annual evaluation (int.)	x	x	x	x	x
• External: Ministry of Education or Agriculture	x				

Source: Questionnaires

BEST COPY AVAILABLE

6.7. Interview with retailers of organic products

6.7.1. **The German case**

The interviews with nature food retailers were carried out in health food stores, two municipal and one village. None of these enterprises is a franchise enterprise. One store has a single employee, another one has five. No information was received on the number of employees in the third store, which represents a reintegration project for women. One woman and two men were questioned. Two of them are 36 to 45 years old, one of them is between 46 and 55 years old. All three interviewees had obtained higher degrees, one of them at a technological college, two of them at university. They have been working for 2,5, 15 and 16 years as storekeepers for ecological products.

Information sources

The following sources for market-oriented information on ecological products were named:

(a) wholesalers farmers, booklets, books about diet, magazines (each one three times);
(b) importers, TV/radio, newspapers (each one twice);
(c) friends and relative manufacturers, conferences, fairs and exhibitions (each one once).

The purchase of the ecological products is carried out via wholesalers, manufacturers and farmers. All storekeepers indicated that enquires for organic products increased over the last two years.

Assortment

All three stores have a full assortment of nature food goods though none of them offer nutrition supplements, such as vitamins, enzymes or proteins. In addition, cosmetics from natural bases and articles for the household are on offer in all stores as well as textiles in one of the stores.

All three interviewees named fruits, vegetables, bread, dairy products and cheese as their most important goods. Additionally, one of the storekeepers also offers meat and hygiene articles, while another offers dried goods and oil.

Customers

Two of the retailers were able to place the majority of their customers in the 41- to 55 age-group. The age of the customers of the third store covers all groups. The standard of education of the majority of the customers was evaluated as above average. At two stores the customers are regulars and

have visited over a long period of time. According to one retailer this regularity is due to the location in the residential area. The other one took as reason the marketing effect of their slogan: 'We offer more than Eco!'

A number of methods were used to increase customer numbers: improved information via customer councils and marketing; certified and tested products; and the build-up of trust between the customer and the retailer of organic products. Reduction of consumer prices was mentioned by two retailers as a further option. The improvement of information by public agencies as well as competent consulting were each named once.

Two of the interviewees are members of the federation for natural food and natural goods (*BNN*) as well as of the leading German association for retail trade (*HDE*). The third retailer is not a member of any union.

6.7.2. **The Greek case**

Three retailers of organic products in Thessaloniki, each involved in substantial and representative activities in this sector were interviewed, giving rise to the following conclusions.

Profile of the entrepreneur

The establishment of all the three organic shops took place between 1996 and 1999. None of them belongs to a franchise; they are personal entrepreneurs and employ one person in addition to the owner. Retail shops are certified by a certification organisation.

Retailer profile

Two of the three retailers are females. They are between 36 and 45 years old with a high educational level (technical vocational school graduates and university graduates). None of the retailers are members of a professional union. Their main sources of information regarding organic products are:

- farmers, importers, wholesalers;
- books magazines and brochures dealing with nutrition;
- seminars on organic farming;
- social environment (friends, etc.).

Operation of the entrepreneurs

The main organic product suppliers to the retailers are:

- farmers;
- wholesalers;
- importers.

The products they offer are:

(a) nutrition supplements: vitamins and enzymes;
(b) organic products: fruits, vegetables, cereals/bread/pasta, legumes, wine, olives, olive oil, rice, herbs, sweets/marmalades, eggs, honey, cosmetics.

However, the products for which there is the highest demand are vitamins and fruits, vegetables, cereals/bread/pasta, legumes, wine, olives and olive oil, rice and eggs. All the retailers believe that demand for organic products is continuously increasing.

Customers – consumers

The majority of customers of the three organic retail shops have the following profile:

(a) consumers with specific knowledge and information on hygiene and nutrition;
(b) consumers conscious about environmental issues;
(c) consumers with health problems;
(d) consumers with special on taste preferences.

All of them are permanent customers.

As far as their personal characteristics are concerned, the majority belongs to the age groups 41-55 years old as well as to the 25-40 year old group. Most have university degrees.

The retailers believe that an increase in the number of consumers of organic products will be brought about by the improvement of information sources from consumer unions and state institutes in combination with measures for increasing the confidence between retailers of organic products and consumers.

Retailers' training needs

The retailers identify training needs, to help them become more effective entrepreneurs, in the following areas:

(a) quality control of agricultural products;
(b) certification processes;
(c) marketing of organic products;
(d) consumer protection and environmental protection from agrochemicals.

6.7.3. **The Portuguese case**

Three shops were contacted in the frame of the study. One of the shops has already been in existence a considerable time (16 years) of activity and is quite large in terms of the number of employees (30). The other two are considerably smaller and newer. Together, the three shops represent about

30 % of the retail businesses specialising in organic products operating in the country. They are, however, the most important ones in terms of volume of sales, and they are the only three certified shops. Others are just starting or are relatively young. Two of the interviewees are members of *Agrobio* and are involved in *Socert* activities, one of them being a member of its certification commission and the other member of the directive council.

Information on organic products

There is a great diversity between the three cases, regarding sources of information about the market for organic products. In one case, only farmers are consulted. In the second, newspapers, brochures, family and friends, nutrition books and magazines are mentioned in addition. In the third, international fairs are also referred to. However, farmers and brochures seem to be the most important sources.

Operation of the entrepreneur

Farmers are suppliers of organic products in all three cases, but two of the interviewees use other agents as well. In one case there is direct import and in the other, this is supplemented by wholesalers and big supermarkets (for fresh food products).

Selling organic products seems to be a relatively easy task for two of the interviewees. The third stressed that it is difficult to sell, in spite of having a good set of regular clients. However, all recognised that the market is changing and demand is increasing. One of the shops delivers organic products directly to consumers' homes.

The best-selling products vary from shop to shop, both in terms of type and number. The shop with more experience and employees, which also recognised that selling is not so difficult, is the shop that sells a smaller variety of products (cereals, bread, pasta and rice). In the shop with greater difficulties selling, despite ten years of experience and two employees, the range of products sold is wider (cereals, bread, pasta, rice, jam, juices, herbal tea, aromatic plants and food supplements). In the third case, fruits, vegetables and aromatic plants were particularly important. In a way, each shop seems to be specialising in certain types of products.

Customers-consumers

According to the interviewees, the shop clients are, above all, well-informed people in matters such as health and nutrition, and, as underlined by two, also have environmental concerns. One believes that customers have high incomes, good taste, and are influenced by publicity.

Clients are not readily classifiable in a given age category, being quite heterogeneous in this regard. Only one stressed specifically the age group 25 to 40.

There was no consensus on consumer stability, that is, continuous interest in buying organic products. One of the interviewees stated that the clients are 'tasters of new products', a fact which does not contribute to a stable demand. The other two were able to identify stable clients. For one, the reason for stable consumption is normally related to a special diet, for instance macrobiotic or vegetarian. For the other, such stability becomes a rule whenever products please the consumers: 'When a consumer buys a given product and likes it, he/she becomes a regular buyer'.

Promotion of organic products

The interviewees believe that more information is necessary to increase demand. This information should be provided first by public services and then through normal publicity. Price reduction is also seen by two individuals as an important way of promoting an increase in the number of consumers. One of the interviewed mentioned other possibilities (such as more information through consumers' organisations, and partnerships among producers, sellers and consumers), and suggested the use of 'special campaigns involving experts, radio, television and Internet', as a way to 'stimulate people to consume and prefer organic products, even if some of them, like the fresh food products, are not as visually appealing'.

Retailers' training needs

Training needs are quite diversified, and it was difficult to identify a clear pattern of response. It is apparent that shop managers feel a need to learn more about organic farming methods, as well as about certification procedures, marketing and consumer protection. Three of the proposed topics seem to be more relevant as training subjects, as all the interviewees considered them either important or very important: consumer protection against agrochemicals; quality control of agricultural products; and environmental-friendly agricultural production methods. Certification procedures and marketing of organic products did not obtain the same consensus as topics for training courses.

6.7.4. **The Spanish case**

The retailers' interview was carried out in three municipal health food stores in Lleida (Catalonia). None of these enterprises is a franchise enterprise. Two of these stores have two employees and another has just one. They are two

women and one man. The man in the category 46-55 years old and the women 26 to 45 years old. Two of them have a higher educational level and the other to secondary school level. They have been working for approximately ten years as storekeepers for ecological products.

Sources for information on organic farming and products were named as wholesalers, farmers, importers, brochures, books on nutrition, magazines and seminars. They buy the organic products via importers, wholesalers, farmers and manufacturers.

Their clients are between 25-40 years old, and have a high level of information on nutrition and health; they also have awareness of environmental issues. The majority of the customers have a university level education.

In order for their customer numbers to increase, retailers believe that consumers should receive better information from consumers' unions/institutes, public services/the state and advertisements. There should also be certified products and the development of a trust bundle between the retailer, certified product and final consumer. Lower prices for the consumer would also help.

Finally, retailers consider the most important training courses they could attend in order to be more effective in their job are quality control of agricultural products, environmentally friendly farming methods, environmental protection from agrochemicals and certification of organically produced products.

6.7.5. **The Dutch case**

In the Netherlands three local retailers of organic products were interviewed, one of whom was also an important regional wholesale firm. The retailers represent typical segments of the organic market. One is a small natural food shop. The other is a small special shop for (regional) tourist products, including agrotourist products like organic fruits and wines.

Wholesale firm for organic products

The fresh fruit of the fruit cultivators in one of the investigated regions goes to a company, called ODIN, which is one of the larger Dutch wholesalers for organic products. The company only distributes fresh biological products. There are other wholesalers for processed products. ODIN stores the products and distributes them further through three channels: natural food shops, vegetable subscriptions and export firms. It buys the products from producers in the Netherlands but also from other countries, especially in winter. All products are certified products, with an organic label like *EKO*, or

international labels, as far as they are recognised by *SKAL*. For ODIN, working with these labels is a way to guarantee the organic quality of the products: people do not buy products from farmers who are not certified.

ODIN sees itself in a rather comfortable position regarding training and expertise development, compared to producers on the one side and retailers on the other. As a wholesaler, less organic farming expertise is needed, because the handling of biological products does not differ very much from the handling of conventional products. Producers and retailers, however, do need to have greater knowledge of organic products, because they have to deal with them directly and they are confronted with questions from informed and well-aware consumers. To assist its retailers, ODIN occasionally supplies some training in fields like handling of products, presentation of products and development of consumer information.

Retailer of organic products: natural food shop

Natural food shops, which are spread over the Netherlands, are important channels for selling fruit products. We have interviewed one such shop owner for the purpose of the study. This shop has existed for 5-6 years and is run by the owner, together with three employees. The owner has a higher level education. The shop sells a broad assortment of organic products, mainly food products but also some non-food ones, like organic shampoos, washing products, and specific cosmetic oils.

The shop sells both organic wines and organic fruit juices. The wine is usually imported. The fruit juices are also bought from Dutch producers. In the beginning, the shop experienced difficulties in attracting enough clients. However, after a move to another location, among other 'alternative' enterprises, the number of customers has increased and the shop now has a stable clientele. People return because they appreciate the quality of the products and because they are usually people with a strong commitment to environmental issues. Products are not only sold in the shop itself, but also through a system of 'subscriptions', for instance for fruit and vegetables. The shop owner does not highlight any particular training needs. He stresses the need to be kept informed about new developments in organic farming, new types of product and new quality regulations, but he does not undertake any specific training for this. His major sources of information are the newspapers, professional magazines and special brochures from producers. Additional important sources of market information are wholesalers.

Small shop selling organic fruit juices and wines

Some of the ready-made fruit juice and wine products are sold in special shops for the tourist market, usually small shops which offer a variety of organic products from the region. One of these shops is located in a small city in the countryside. It is an independent shop, which originally started as a shop for gifts. Since 1997 it has also sold products from the Waddengroup, under the *EKO*-label. The shop is run as a full-time business by a woman, 34 years old, with a medium level general education.

Her most important organic products are wine, stewed fruits, marmalades and juices, which are bought from wholesalers or directly from the farmers. Most of her customers are higher educated people, with higher income levels, and with special preferences in taste or special wishes regarding health and nutrition. A substantial number of her customers are persons with health complaints (e.g. allergies) or persons who in some way or another are occupied with their physical fitness. This is a rather stable group of customers. Besides this group, there is also a group of incidental customers, e.g. tourists who pass by in the summer season or persons who buy gift selections with one or more organic products in them, such as a bottle of wine. More and more companies are buying regional organic products as gifts e.g. to offer them to customers from abroad or to deliver them as presents to their personnel. During recent years, the number of customers has gradually increased. According to the shop owner, the best way to increase the number of customers still further would be to develop good trust relationships between retailers, certified products and consumers of organic products. Furthermore, lower consumer prices and better information for consumers regarding the variety and quality of organic products could enlarge the market.

6.7.6. Comparative results of retailers of organic products

Retailers constitute one of the major links in the supply chain of organic products. The study took place in certified shops, the main results of which are presented in table 6.7.6.1.

The retailer profile can be summarised as follows:

(a) their level of education varies between graduate from secondary education and colleges (Germany, Spain) and universities (Germany, Greece);

(b) retailers always look for information and knowledge sources, the main ones being:
   (i) farmers, importers, wholesalers;
   (ii) books, magazines and leaflets;

(c) in addition they obtain information from:
  (i) seminars, conferences, exhibitions (Germany, Greece, Spain);
  (ii) their social environment (Germany, Greece, Portugal);
  (iii) the mass media (Germany, Portugal, the Netherlands).
(d) retailers consider they lack knowledge in the following subjects:
  (i) environmental protection from agrochemicals (in all the five countries except Germany);
  (ii) quality control of agricultural products (Greece, Portugal, Spain);
  (iii) consumers protection (Greece, Portugal, the Netherlands).

The entrepreneur profile can be summarised as follows:

(a) in Greece, Portugal and the Netherlands organic food shops are certified by certification institutes;
(b) the main products provided are nutrition supplements and organic products natural cosmetics (Germany, Greece), and household consumables (Germany) are also sold;
(c) the main organic shop providers are farmers and wholesalers, as well as importers; in Germany, Spain and the Netherlands, manufacturers also provide organic food shops;
(d) the demand for organic products is very promising, having increased recent years.

The customers-consumers profile can be summarised as follows:

(a) the age of the organic product consumer varies;
(b) customers are highly educated, have a high level of income, have specific knowledge on organic farming and are conscious of environmental issues; some have heath problems or special taste preferences.

Table 6.7.6.1. **Results obtained from the interviews with retailers of organic products**

	Germany	Greece	Portugal	Spain	The Netherlands
Retailers' profile					
Educational level					
• General education			x	x	x
• Technical vocational school		x			x
• Technological college	x			x	
• University	x	x			
Information sources					
• Farmers/importers/wholesalers	x	x	x	x	x
• Books-magazines-brochures	x	x	x	x	x
• Seminars/conferences/ exhib.	x	x		x	
• Social environm.(friends etc.)	x	x	x		
• Mass media (TV/radio, newsp.)	x		x		x

BEST COPY AVAILABLE

Retailers' training needs					
• Environmentally friendly farming methods			x	x	
• Quality control of agr. products		x	x	x	
• Certification process		x		x	
• Marketing of organic products		x			x
• Consumer protection		x	x		x
• Environmental protection from agrochemicals	x	x	x	x	
Member of professional federations/ associations	x		x		
Profile of the entrepreneur					
• Shop certified by certification institute		x	x		x
• Products provided					
– nutrition supplements	x	x	x	x	x
– organic products	x	x	x	x	x
– cosmetics	x	x			
– household consumables (textiles, washing products)	x				
• Increased demand of organic products	x	x	x	x	x
Providers					
– Farmers	x	x	x	x	x
– Wholesalers	x	x	x	x	x
– Manufacturers	x	x	x		
– Importers	x	x	x	x	
Customers-consumers profile					
• Age	41-55	41-55	25-40	25-40	25-55
• With specific knowledge and information	x	x	x	x	
• Conscious on envir. issues		x	x	x	x
• With health problems	x	x		x	x
• Consumers with special preferences on taste	x	x	x		
• High income level		x	x		x
• High educational level	x	x		x	x
Promotion of organic products					
More information from:					
• Public services				x	
• Price reduction			x	x	x
• Consumers' unions			x	x	
• Partnerships among producers /sellers/consumers					x
• Special campaigns through					
– experts			x		
– mass media			x		
– Internet			x		
– advertisements				x	

Source: Questionnaires

BEST COPY AVAILABLE

6.8. Interview with consumers who buy organic products

6.8.1. **The German case**

The survey was carried out with five customers of health food shops. The interviewees were mainly younger people, three belong to the age group between 26 and 35 years and one each to the 36 to 45 and 46 to 55 groups. All interviewees were highly educated, two of them having a technical college degree, three of them a university degree and one a PhD. Their professions were communications engineer, agricultural scientist, gardener, IT coach and student. Two were single and the other three married. Two interviewees live on their own, three adults live with partners, two of them with an additional child under 18 years. The annual net income is between EUR 9 001 and 15 000 (two) and between EUR 21 001 and 30 000 (two). The net income of one interviewee is above EUR 30 000 per annum.

Friends and family are the main source of information on organic products, followed by stores and wine stores. Magazines also play a subordinate role, in combination with the specialists at natural food stores. Additional sources of information are consumer councils, newspaper, school, exhibitions, and a public information service for diet and home economics, TV/radio, diet magazines and the Internet.

From the interviewees point of view, the state should protect consumers of organic products by establishing an appropriate trademark and by frequent inspections as well as by listing ingredients on the label. Specialists in the stores as well as special shelves in the supermarket are considered good forms of promotion. All the interviewees believe in the ability of the state to protect the consumers, though sale through certified stores is not considered appropriate.

6.8.2. **The Greek case**

Five consumers of organic products were randomly selected for interview in organic product shops in the Thessaloniki region (Central Macedonia). A qualification for participation was that the interviewee had been purchasing organic products for more than a year.

The selected interviewees were three women and two men with ages between 26 and 55 years old. Four of the five have a university degree and all belong to higher income social classes.

159

The majority of the respondents consume wine but not in large quantities. They usually prefer red wines, considering them more tasty and healthy. They usually buy wine from special shelves in the supermarkets but rarely from organic shops.

All the respondents use olive oil in their diet. The type of oil they prefer is mainly extra virgin (< 1 % acidity), because they consider it more healthy and tasty, compared to other qualities/types. They usually buy olive oil from special shelves in the supermarket, from organic farmers and sometimes from conventional farmers.

Most of the consumers have been buying organic wine and olive oil for more than three years. They are willing to pay a premium for these products, but the premium should not exceed 50 % of the conventional price. Consumers of organic wine and olive oil usually also purchase other categories of organic products (fruits, vegetables, bread, eggs, etc.).

Their main sources of information on organic production and products are books on nutrition, magazines, brochures, organic farmers and friends. Consumers believe that the state could organise information campaigns for consumers through the mass media (radio, TV, newspapers), state institutes (Institute for Information on Nutrition and Home Economics), and school education (special courses and training regarding nutrition, the environment, information on the market for organic products, etc.). Additionally, consumer unions and institutes could inform people through seminars, lectures or exhibitions of organic products. Some of the respondents have attended lectures about organic farming and products, but none of them have attended any seminar and training on this subject.

The majority of the consumers interviewed believe that the state should protect organic product consumers by taking appropriate measures. These could include frequent inspections, compulsory recording of ingredients on the product label, if the products are packaged and compulsory certification labels on products.

6.8.3. **The Portuguese case**

Wine consumers' perspectives

Four wine consumers were interviewed at a Fair of Organic Products held in Porto, northern Portugal. Their characteristics are presented in the following table.

Table 6.8.3.1. **Characteristics of the wine consumers interviewed**

Characteristics	Wine Consumers			
	Case 1	**Case 2**	**Case 3**	**Case 4**
Age	46 to 55	36 to 45	56 to 65	56 to 65
Marital state	Married	Married	Married	Married
Professional activity	Clerk	Homekeeper	Business Director	Retired
Level of education	Secondary School	Basic School	BSc	Secondary School

The level of family income is between EUR 9 000 and 21 000 in three cases and higher than EUR 30 000 in the last case.

The major aspect taken into consideration when buying wine is the taste. In fact, independently of the type of wine consumed (white or red, local, non-bottled or organic), taste is the justification for purchase given by the interviewees. A second motive is the appearance of the wine. In three of the four cases, health is also quoted in the three most important factors.

Wines are usually bought at the supermarket, with the exception of one interviewee who buys directly from the producer, but rarely from an organic farmer. This individual was the only one who consumes organic wines, although not often. He buys organic wine for a period of six months' consumption.

Other interviewees do not buy organic wines mainly because of lack of availability in local stores. However, the one who buys once in a while stressed the high price as an obstacle to regular consumption. All the interviewees are willing to pay more for organic wines, with one consumer accepting a higher price of 10 % and the others no more than 30 %.

The major sources of information about organic wines are television, radio, newspapers, friends and family. School and brochures were not mentioned, and the other potential sources not valued. None of them consumes other types of certified organic products. One, however, does produce fruits, vegetables, and eggs in an organic manner, but without any certification.

None of the interviewees have participated in seminars or other initiatives on nutrition and health, nor are they members of a consumer association or environmental organisation. In their opinion the state should protect consumers through legislation requiring frequent control, through a guide to 'buying organic products', and an organic label. Some also stress the value of certified shops, the importance of specifying ingredients on the product label, and using special shelves in the stores. Such measures should be imposed by the state to protect the consumers.

BEST COPY AVAILABLE

The only way they can identify an organic wine is the label. They stressed that this should have clear information about the whole production process, from the vineyard to the bottle, showing that organic methods were followed both on the farm and at the cellar where wine is stored.

Olive oil consumers' perspectives

Four olive oil consumers were interviewed at a Fair of Organic Products held in Porto, northern Portugal. Their characteristics are presented in the following table.

Table 6.8.3.2. **Characteristics of the olive oil consumers interviewed**

Characteristics	Individuals			
	Case 1	**Case 2**	**Case 3**	**Case 4**
Age	36 to 45	56 to 65	46 to 55	26 to 35
Marital status	Married	Married	Single	Married
Professional activity	Clerk	Teacher	Homekeeper	Commercial Agent
Level of education	Secondary Education	BSc.	Basic School	BSc

All individuals use olive oil quite frequently in their diets. The estimated amount consumed per family member per year varies between a minimum of 0,4 and a maximum of 1,1 litres. All those interviewed prefer olive oil with a low degree of acidity, between 0,3 and 0,7. The major reasons are health concerns (an association is made between low acidity and healthy product), and better taste. In all cases, price was considered a minor aspect when deciding which olive oil to buy.

Olive oil is usually bought in the supermarket, with the exception of the individual who buys directly from one producer. Two of the interviewed admitted to buying in small grocery stores, when needed. None buys this product from a cooperative and only one buys it, though rarely, from a certified organic farmer. In this case, he buys it for a period of at least six months.

The reason why most consumers do not use organic olive oil is the absence of this product in the local stores. However, one stressed that he was happy with the olive oil normally used and was not looking for an alternative. All were in favour of paying more for organic olive oil: two were willing to pay 30 % more, and other two 10 % more.

Information about organic olive oils is mainly provided through magazines, friends and family (three references each). According to the interviewees,

BEST COPY AVAILABLE

consumers prefer to get information about organic products from the television and radio. Food magazines, the school, advertisements, consumer organisations and specialised stores, were mentioned as important by two interviewees. Those who see school as a good source of information, said that it should stress environmental education, without underestimating the importance of special courses, special education, excursions and written documentation.

Organic products, such as fruits, vegetables, bread, cereals, jams, and juices, are only consumed regularly by one of the individuals.

The interviewees believe that the state should protect consumers through frequent control of organic product labels on stores shelves. Three of the four stressed that organic products should be sold in certified stores. Other protection measures (specification of ingredients on the label, specialised store staff, shopping guides) were also mentioned twice.

Most individuals stress that the label is the best way of recognising an organic olive oil. Consumers would like to know, above all, the age limit of the product, and to be sure that it is 100 % organic. All other possibilities were also chosen (origin of olives, cultivation techniques, processing techniques, use of any additives, other ingredients), showing that that there is a strong interest in information related to organic olive oil. This fact may be the result of the lack of information about this product.

6.8.4. **The Spanish case**

The survey was carried out with five wine consumers. All of them are aged between 26-35 years, highly educated and married. The net annual income of the household ranges between EUR 15 001 and EUR 30 000.

Most of them drink wine frequently and consume between 0.3 to 0.5 liters every day. They prefer red wine and local unbottled wine but they also drink white wine and retsina in some cases. The most important influences on wine purchase are low price, larger store period and habit.

Consumers usually buy wine from cellars, supermarkets, hygiene product shop but rarely from organic certified producers. They are not used to buy organic wine because they cannot find it near their homes. Most of them are willing to pay a premium of about 10 % to buy organic wine. People who buy organic products usually buy fruits, vegetables, potatoes, milk, eggs and meat.

Their sources of information on organic wine are friends and relatives. Additionally they are informed about organic products by schools, TV/Radio, seminars, special shops from specialists and newspapers. They believe that seminars are an effective way of obtaining information on different food

types, health and metabolism, nutrition and the environment and marketing and prices of organic products.

They believe that the state could protect consumers of organic products through frequent inspections, organic labelling, information on the label and distribution in certified shops for organic products. Although the majority of consumers identify organic wine by the label, they cannot be secure about the origin of the product.

The information that consumers would like about organic wine concerns ingredients, origin of grapes, additives, everything from cultivation to the market and a warranty that it is 100 % organic.

6.8.5. **The Dutch case**

The consumers interviewed were all middle-aged persons with a higher level secondary or academic education, working in well-paid administrative or service jobs. Some of them had already been involved with environmental issues for a long time. Some were active in the fields of environmental education and nature protection.

These consumers appear not to be great organic wine consumers. They buy such wine occasionally, most of the times in a natural food shop. There, they find usually only organic wines from larger wine countries like Germany, Italy and France. Most of them also drink conventional wine, more than organic wine.

All these consumers have a broad organic menu. They not only buy wine and fruit juices, but many other organic products as well, in particular bread, cereals, milk and dairy products, eggs, vegetables and marmalades. They know that they are more expensive than conventional products but they are willing to pay this higher price and are even willing to pay still more; for some up to 50 % above actual prices.

Their major sources of information regarding organic products are friends and relatives and special brochures they find, e.g. in the natural food shops. Nutrition magazines and specialist shops are also preferred sources of information. In this regard, they do not expect much from other sources such as newspapers, radio/TV, agricultural schools, the Consumer Union or agricultural public information services. None of them has ever visited a seminar or equivalent run by the Consumer Union or the agricultural information service in his region. They have also never attended any particular seminars or lectures about nutrition and health. However, three of them are members of an environmental organisation.

When they buy organic wine or fruit juices, all of them are interested in information about the product. They are especially interested in information

about the ingredients, the origins of the fruits and grapes and the additives used. They are less interested in descriptions of the exact cultivation and production methods. The best way for producers and retailers to provide this information would be to write it on the bottle label or to put it in special leaflets, delivered with the bottles.

When asked how the state could protect consumers of organic products, the interviewees all mention frequent controls as an important instrument. A second important instrument would be a specific organic label (e.g. the *EKO*-label). A third instrument would be the requirement that ingredients are accurately written down on the labels of organic products. None of the interviewees thinks that sale only in certified shops or only on special shelves in the supermarkets would be adequate instruments for consumer protection.

6.8.6. **Comparative results of consumers of organic products**

The consumer is the final receiver of every product and, therefore, his preferences determine the production process of all the categories of products. The consumer profile can be summarised as follows:

(a) organic food consumers belong to several age groups, ranging from 26 years to over 65;
(b) the level of education is high (including graduates from secondary school and also Ph.D. graduates);
(c) the income level of organic food consumers is high in three of the five countries (Greece, Spain, the Netherlands), whereas in Germany and Portugal it varies;
(d) the basic sources of information regarding organic products are:
    (i) books, magazines and leaflets;
    (ii) organic farmers and friends;
    (iii) mass media;
    (iv) school;
    (v) consumer unions and exhibitions;
(e) organic food consumers want information and details of cultivation and processing of organic products.

Consumers from all the five countries consider that the state should be activated and oriented towards a strategy for the protection of consumers of organic foods, taking measures such as:

(a) inspection and certification of organically produced products;
(b) compulsory certification label on all the certified products;
(c) compulsory labelling of product ingredients in cases of packed products.

Table 6.8.6.1 provides the main characteristics of the interviewed organic food consumers.

Table 6.8.6.1. **Results obtained from consumers' interviews**

	Germany	Greece	Portugal	Spain	The Netherlands
Consumers' profile					
• Age group	26-35	26-55	36-65	26-35	35-55
• Level of education					
- Secondary school			x		x
- Technical college	x	x			
- University	x	x	x	x	x
- Ph.D.	x				
Income level					
• High income level		x		x	x
• Different income level	x		x		
Information on organic products					
• Books for nutrition/ magazines /brochures	x	x	x		x
• Organic farmers/friends	x	x		x	x
• Mass media (TV/radio, newspapers)	x	x	x	x	
• Public institutes		x			
• School education (courses/excursions etc)	x	x	x	x	
• Consumer unions		x	x		
• Exhibitions	x	x			
Consumers' protection State should protect organic product consumers by taking measures, such as					
• frequent inspections/ control	x	x	x	x	x
• compulsory record of ingredients on product package		x	x	x	x
• compulsory certification label on the products	x	x	x	x	x
• guide on "buying organic products"	x		x		
Needs for information					
• cultivation methods details	x	x	x	x	
• distribution details				x	
• expiry date			x		

Source: Questionnaires

BEST COPY AVAILABLE

CHAPTER 7

Conclusions and suggestions

7.1. Conclusions

European agriculture is increasingly producing organic products, following the international trend. Food production from organic farming is approaching 5 % of the total food production; this percentage will reach 10 % by the year 2010.

CAP reform and Agenda 2000 provide an environmentally friendly approach to rural areas and the countryside, through the specific regulations and measures they introduced regarding either organic production (Reg. 2092/91) or the conversion of conventional enterprises to organic ones (Reg. 2078/92). The transformation of quantity intensive agriculture to quality intensive aims at improving its competitiveness by producing 'quality', 'healthy' and 'safe' products, in the frame of a sustainable management of natural resources. Research in agriculture changes priorities and options: new knowledge and innovative production focus on the multi dimension concept of 'quality' of agricultural products (certification, labelling, marketing channels, health, sensory attributes, etc.).

The introduction of inspection and certification institutes aims at providing and ensuring quality in the production of agricultural products. The certification and labelling system is based on patterns and specifications of proper farming practices determined at national and European level. Recently, the European logo for organic farming was introduced (Reg. 331/2000). This logo will make organic products (vegetables and dairy) more transparent to consumers, whereas for farmers it will be a useful marketing tool (European Commission, Directorate of Agriculture, 2000).

Each EU member develops its own national policy in secondary education for the development of environmental consciousness and awareness of students –(future citizens). As far as vocational agricultural training in organic farming is concerned, several systems have also developed within each country; however, the general finding is that trainees are taught courses in order to acquire specific skills in organic farming practices and sustainability.

Innovation and know-how comes mainly from research: universities, research institutes, pilot stations, private companies, and literature. The diffusion of innovation is via two main routes. There are national bodies such

as the Ministry of Agriculture and its services throughout each country (agronomists-extensionists-trainers, training centres), agricultural universities (researchers), and research institutes (researchers). There are also private bodies: inspection and certification institutes (agronomists-inspectors); private companies involved either in the provision of inputs for organic farming or in the marketing process of organic products; and farmers' associations.

The transfer of know-how is mainly provided through training courses/ experimental training (trainers), exchanges of experience between farmers and inspectors or extensionists, meetings, leaflets and magazines. The main recipients are organic farmers, retailers and consumers.

The following paragraphs summarise the main results derived from the survey.

Organic farmers tend to be young with a medium or a high level of education. Their main sources of information on organic farming are training courses, magazines, leaflets and books. Farmers feel they lack knowledge in aspects such as plant protection, product quality, soil nutrition and fertilisation and marketing of organic products.

Agronomists/inspectors specialised in plant production, attended several courses, seminars and conferences regarding organic farming. They usually consult relevant literature, and colleagues for knowledge acquisition, as well as research centres and conferences. The subjects they consider important for future training are plant protection, organic farming practices and certification processes for organic products.

Extensionists can be civil servants of the Ministry of Agriculture, employed by farmers' organisations or work as private consultants. They have attended training courses, seminars, meetings and conferences both at national and international level. Extensionists are interested in participating in training courses regarding protection, irrigation, fertilisation and marketing of organic products.

With regard to key people in innovation transfer and knowledge dissemination, each country has developed a different system to meet the needs of the rural population. Agricultural training centres (ATC) provide initial and supplementary training in short courses. They employ trainers from several professional bodies: universities, research institutes, associations, etc. In Germany, Spain and the Netherlands, ATCs employ teachers on a permanent basis. ATCs have not yet developed specific courses relevant to organic farming, but include these issues in other training courses. It is worth noting that the results of the survey suggest a lack of collaboration among agronomists/inspectors, extensionists and key people in innovation transfer and knowledge dissemination at local level.

178

The profile of high school teachers differs between countries and includes agronomists, biologists, chemists, geographers, geologists, etc., with postgraduate studies in teaching methodology and pedagogy. They are interested in environmental training, particularly issues such as European dimensions and initiatives about human actions and the environment, consumer protection.

The role of teachers in technical vocational agricultural schools (TVAS) is to prepare farmers for the agricultural sector. Teachers are graduates from Agricultural Universities in all countries except Spain, have attended post graduate studies in teaching methodology (Spain excluded), as well as training courses and seminars. Teachers appear to have serious gaps in knowledge and information on organic farming and are interested in training courses such as quality of agricultural products, organic farming practices, environmental education and consumer protection. In Greece, and in some cases in Spain and the Netherlands, specific courses regarding organic farming are included in curricula, while in all the five countries, several environmental aspects are included in specific courses.

Retailers of organic products are one of the major links in the chain between production and consumption. Their level of education varies between graduate from secondary education and college or university. They look for information and knowledge sources from farmers, importers, wholesalers, books, magazines and leaflets. In addition they obtain information from seminars, conferences, exhibitions, their social environment and the mass media. They believe they have a lack of knowledge in environmental protection from agrochemicals, quality control of agricultural products and consumer protection.

The consumer is the final receiver of every product and therefore, his preferences determine the production process for all categories of products. The organic food consumer belongs to several age groups, ranging from 26 years old to over 65. His/her level of education is high, as is the income level. The basic sources of information regarding organic products are books, magazines and leaflets, organic farmers and friends, mass media, consumer unions and exhibitions. The organic food consumer wants information and details on cultivation and processing of organic products.

From the present study it is obvious that all the people concerned - farmers, inspectors, extensionists, teachers, retailers, and consumers - consider they lack knowledge, mainly regarding production process in organic farming and organic products. In addition, they indicate that there is a lack of continued information.

7.2. Formation of a common policy in education/ training and knowledge dissemination

The organic farmer of today is bringing innovation to the rural areas where he lives and works. In order for this innovation to be rationalised and widely expanded it has to be reinforced through:

(a) support for organic farming from the state and national agricultural policies;
(b) concerted publicity for a unified European organic label;
(c) activation of Ministries of Agriculture and consumer unions within EU countries, and dissemination of information.

More precisely, a collection of measures under the general description 'Technical cooperation programme' could contribute to the settlement of potential problems. This programme could include the measures described in the following sections.

7.2.1. **Research and knowledge generation**

Research should provide answers for the sustainability of natural resources, while ensuring that enough food is produced to satisfy the needs of the increasing world population. Today, many researchers (universities, research centres, etc.) are focusing their interest on organic farming problems and issues. The support of research activity for the acquisition of knowledge, new technology and know-how, could contribute towards the implementation of organic farming practices, protection of the environment and the consumer.

Additionally, in recent years agricultural universities are starting to provide their graduates, to varying degrees, with relevant knowledge in the field of sustainable agricultural development and environmental friendlier farming practices. Technological educational institutes (tertiary education) are adjusting their analytical programmes in such a way as to prepare high technicians for the sector of organic farming.

The rapid expansion of organic farming has led to a developing gap in knowledge among older graduates from university or technical agricultural education. The provision of new knowledge and the transfer of innovation through re-training (agronomists in the Ministry of Agriculture, cooperatives and unions) and training of trainers (teachers in high and technical agricultural schools, trainers in centres of vocational agriculture, trainers in associations, etc.) is a precondition for further and effective diffusion of organic farming.

7.2.2. Training of human resources, knowledge dissemination and transfer of know-how

The dissemination of acquired knowledge, know-how and modern practices for organic farming can be provided through training or re-training of human resources. These experts could spread their knowledge to organic farmers, as well as to people employed in processing organic products. The survey showed that experts have training needs in many subsectors of organic farming. The most important training needs are presented in the following tables.

Table 7.2.1. **Suggested training courses for agronomists / inspectors**

	Germany	Greece	Portugal	Spain	The Netherlands
Training courses by significance order					
• organic farming methods	x	x			x
• plant protection		x	x	x	x
• marketing		x		x	
• environmental education		x		x	
• quality control		x	x		
• certification process of organic products	x	x	x		
• consumer & environmental protection			x	x	

Source: Questionnaires

Table 7.2.2. **Suggested training courses for extensionists**

	Germany	Greece	Portugal	Spain	The Netherlands
Training courses by significance order					
• agricultural methods friendly to the environment		x	x		
• cultivation techniques issues (protection, irrigation etc.)	x	x	x	x	x
• marketing of organic products	x	x		x	x
• consumer protection		x	x		x
• environmental protection	x	x			
• environmental education	x				
• processing technology	x				
• farm technology	x				x
• regulations	x			x	
• consultancy skills					x

Source: Questionnaires

The training of human resources could be developed also at European level, with the potential for a European network for information and exchanges on organic farming to be established.

BEST COPY AVAILABLE

7.2.3. Education and awareness

Environmental education and awareness demands action on an international scale. Secondary education, both at national and at international level, can play an important role in the development of awareness among students and in changing their attitudes and beliefs regarding the environment and its protection. Taking into account the absence of a common educational policy within the EU, the following suggestion can be considered: collaboration between Ministries of Education and/or between schools for a call for a European competition regarding environmental protection, in which all secondary schools can participate. In addition, the preparation and the provision of knowledge of teachers/ trainers also is a precondition for secondary education on awareness development and protection of the environment.

Table 7.2.3. **Suggested training courses for teachers in high schools**

	Germany	Greece	Portugal	Spain*	The Netherlands*
raining courses by significance order					
• quality of agricult. products		x			
• consumer protection	x	x			
• issues of European dimens. and initiatives about human and the environment	x	x	x		

(*) high school teachers were not involved in environmental education in the studied regions.

Source: Questionnaires

7.2.4. Vocational agricultural training

Today's consumers put specific emphasis on the development of a relationship with the provider of agricultural products (either the farmer or the retailer). This relationship has the potential for the diffusion of specific knowledge and so is important for farmers and retailers. According to several studies, organic food consumers demand that traders have specific knowledge/education.

There are now opportunities for employment in hygiene shops and shops selling organic products, a relatively new sector requiring training and knowledge. Additional specialities could be introduced in secondary vocational agricultural training, for groups such as farmers, retailers and experts in marketing.

An important category of future employees – especially in large European farm enterprises, which require a labour force in addition to family members – are farm workers skilled in organic operations. Low and medium levels of

BEST COPY AVAILABLE

technical professional education could consider appropriate skill acquisition for farm workers in organic farming, taking into account the free exchange of employees within EU. This can be achieved through thorough examination of the new professions and qualifications at EU level.

Finally, serious gaps in knowledge are identified among teachers in vocational agricultural schools. Table 7.2.4 classifies knowledge requirements for training and re-training of teachers, in order to acquire the appropriate skills in this sector.

Table 7.2.4. **Suggested training courses for teachers in TVAS**

	Germany	Greece	Portugal	Spain	The Netherlands
Training courses by significance order					
• Environmental education	x	x	x	x	
• Organic farming		x	x	x	
• Quality of agricultural products	x	x	x	x	x
• Consumer protection	x	x		x	x
• Marketing of organic products		x			
• Environmental dimensions and initiatives in EU	x	x		x	

Source: Questionnaires

7.2.5. Distribution of relevant leaflets

The collaboration of several bodies at EU level (universities, research institutes, pilot stations) is essential to successful transfer of know-how and the diffusion of knowledge derived from experimental studies. The establishment of a European network could significantly contribute in this respect.

7.2.6. Promotion of organic products and consumer information

If it assumed that the supply of organic products increases and consumers are aware of prices, education is the key to further increasing the demand for these products. The majority of consumers are poorly informed about the problems and the higher production costs of organic farming practices and the external benefits of organic farming. Consumers should understand that organic products are healthy and are of high quality. The promotion of organic products in EU consumer could be provided through:

(a) appropriate information;
(b) the provision of educational activities;
(c) the organisation of meetings, exhibitions, etc.;

BEST COPY AVAILABLE

(d) the production and distribution of leaflets, audiovisual materials, etc.;
(e) a specific promotional campaign similar to this for conventionally labelled products.

Any programme for technical cooperation in the field of organic farming at EU level can only be implemented after an extended research and collaboration in all the EU countries. The extension of the present study into the sector of organic dairy production could contribute to the formation of an integrated view on the maintenance of natural resources and sustainable food production.

CHAPTER 8

Summary

8.1. Background

European agriculture is at the beginning of a new era. The integration of the dimensions of agriculture into the framework of Agenda 2000, by the Council of Ministers of Agriculture and the accreditation from the summit of Berlin, sets out parameters for the European agricultural policy for the next six-year period (2000-2006). European agriculture within this period is required to integrate the infrastructures for:

(a) the development of agriculture;
(b) the reconstruction of rural areas;
(c) the competitiveness of European agriculture within the international competitive environment;
(d) the shift towards quality, traditional and organic agricultural products;
(e) alternative forms of employment/multiactivities;
(f) the management of water resources, forests, fishery, the environment.

These parameters effectively reset the major agricultural policies of the EU, with a knock-on effect on EU members in the future. Consequently, the reform of the Common Agricultural Policy (CAP), has significant political interest and requires the development of a new structural and organisational frame in order to promote and enhance the integrated development of rural areas. In 1992, CAP was reformed in an attempt to include environmentally friendlier aspects in agricultural policy, provide for the environment with the rational use of inputs and natural resources and, reposition the rural population as guardians of the environment and of the nutrition.

For the successful implementation of the new policies, however, top-down approaches such as the imposition of measures, directives and regulations may not be enough, if the human factor is not taken into account. 'Not only the practices shift agriculture to sustainable agriculture, but also farmers themselves and their values; these values incorporate the element of sustainability as an important/significant part of their quality of life' (Siardos, 1993). Education and training constitutes the most important procedure for the development of new attitudes and values. Moreover, training can contribute to the development of environmental awareness among the rural population and, especially, future farmers.

Taking into account the new challenges in the agricultural sector (the future extension of the European Union, CAP reform, evolution at international level, innovations and new technology, the agricultural trade balance) the cultivation and production of environmentally friendly products, such as certified organic products, could improve the competitiveness of European agriculture in the international market. In addition, the development and further expansion of the land cultivated with organic products could improve the integrated development of the countryside and the protection of the environment. Simultaneously, consumer preferences for healthy products free of agrochemicals, will encourage farmers to produce organic products.

Finally, the European Union has introduced regulations and structures for the control and certification of agricultural products produced by organic methods (EU Regulations 2092/91, 2078/92). Therefore, it is critical to identify the level of information and awareness, as well as the training needs, of all the people and institutions that are involved in this supply chain: farmers, inspectors, agronomists, extensionists, teachers, retailers and finally consumers. This is the basis for the proposal of the present study, which took place in five European countries: Germany, Greece, Portugal, Spain and the Netherlands.

8.2. Objectives of the study

The main objective of the study is to examine the existing structures of environmental education and of agricultural practices friendly to the environment. In addition, it aims to define new knowledge skills/qualifications related to environmental issues in the production process of alternative agricultural products without agrochemicals (organic farming) and ways they can best be acquired.

More precisely, the objectives of the study could be summarised as wishing to:

(a) examine existing structures/possibilities for environmental education/training in general and agricultural schools;
(b) examine existing structures for knowledge dissemination and information related to the protection of the environment and learning of organic production methods (according to EU Reg. 2092/91);
(c) examine existing skills and training needs of farmers with certified farms who have been producing organic products in recent years;
(d) examine the existing skills, activities and training needs of:

(i) agronomists inspectors from the certification institutes;
(ii) teachers of environmental education in agricultural and other high schools;
(iii) agronomists/extensionists from the Ministry of Agriculture;
(iv) retailers; consumers who prefer organic products, with regard to their level of information and knowledge regarding hygienically and organically produced products;

(e) describe the national systems and institutes responsible for the certification of organically produced products;
(f) establish, on a European level, skills in education/training and knowledge dissemination in the organic farming sector.

8.3. Methodology

The first step in the design of the study was to collect secondary and statistical data from all the relevant available sources (ministries of agriculture, ministries of education, national statistical services, Eurostat, EU regulations, inspection and certification organisations for organic products, relevant literature).

The second step in the design of the study was to decide the specific area in each country where the case study would take place. The selection of the area was based upon the potential for organic farming and the extent to which the supply chain of organic products was developed in the area.

The third step was the selection of the products to be studied. A common organically produced product was selected for all the five participating countries. This product was organic wine, and found to be the most appropriate for the purposes of comparability in the structures and systems of certification. As a second product, organically produced olive oil was selected from Greece and Portugal, organic potatoes from Germany, organic vegetables from Spain and organic fruit juice from the Netherlands.

The next step was the design of the methodology and tools that would be used for the analysis. In order to meet the objectives of the study, specific questionnaires were designed for each category of people involved in the supply chain: organic farmers, certification institutes, inspectors, consultants, teachers, retailers, and consumers.

The work team in each country described the overall supply chain for organically produced products. The analysis covered all the interactions within this chain. Finally, personal interviews took place for each body using appropriate questionnaires. The questionnaires aimed to examine the environmental consciousness, attitudes and behaviour through education and training, knowledge dissemination, information and new skills.

8.5. Conclusions

The study produced interesting results regarding the professional profiles and training needs of key players: organic farmers, agronomists-inspectors, agronomists–extensionists, key people in innovation transfer and knowledge dissemination, teachers in high schools, retailers of organic products and consumers. It also provides issues for discussion relating to product certification and distribution.

The main findings arising from the study is that education, training, innovation transfer, and information on the production of certified organic products, as well as on their distribution in the market, are important for all the bodies involved in the chain, regardless of educational level.

The results obtained from the present study suggest that several curricula can be designed and implemented in conjunction with anticipated rapid increases in the market for certified organically produced products within EU. Products from organic farming are expected to reach 5 % of total agricultural production, and it is estimated that by 2010 this percentage will exceed 10 %.

In consequence, a 'Technical cooperation programme' could be introduced as an umbrella under which the following sub-programmes could be included:

Research and development; a programme including support for research activities in the fields of cultivation, processing, standardisation and distribution.

Training of human resources; concerning the dissemination of modern techniques among organic farmers, through the training of experts. These will be responsible for the dissemination of acquired knowledge to farmers and people involved in the processing sector.

Technical support; including the supply of technical and technological support within EU countries, as well as experience exchange under a European information network on the organic farming sector.

Publication and distribution of technical leaflets; based on international/European collaboration among universities, research institutes and experimental laboratories, aiming for transfer of know-how, knowledge dissemination and the writing and publication of technical leaflets.

Promotion of organic products and consumer information; aimed at increasing the consumption of organic products at European and international level. The promotion of organic products to the European consumer can be achieved by:

(a) the provision of information to the consumer;
(b) the provision of educational activities;
(c) the organisation of meetings, exhibitions, etc.;
(d) publication and distribution of leaflets, teaching means, radio and TV productions, etc.

In order for a 'Technical cooperation programme' for organic farming to be established at a European level, thorough research and cooperation among all EU countries is essential, in order that the basic principles of operation and implementation can be properly designed.

CHAPTER 9

Bibliography

AGROBIO (1996). *Estudo de Base sobre o Mercado da Agricultura Biológica em Portugal*, Vol. I e II. Lisboa: Associação Portuguesa de Agricultura Biológica.

AID (1996): *Qualifizierung im ökologischen Landbau*. Bonn.

AID(1998): *Berufsbildung im Weinbau*. Bonn

Amerine M.A., Berg H. W. and W.V. Cruess. *The Technology of Wine Making*. 2nd Ed. AVI, INC. Westport, Connecticut, 1967.

Bosckou D. (Ed.). Olive Oil Chemistry and Technology. *AOCS PRESS*, Champaign, Illinois, 1996.

Bundesministerium für ernährung, landwirtschaft und forsten (1995-2000): Agrarbericht der Bundesregierung. Berlin.

Bureau of Organic Products, Ministry of Agriculture (1999). Unpublished data.

Centraal Bureau Levensmiddelenhandel (2000), *Consumententrends 2000*, Leidschendam: CBL.

Communautés Européennes (2000). *La Politique Agricole Commune*. Synthèse 1999. Luxembourg: CE, DGA.

Consumer, Seller Surveys Show Barriers to Organics (1991). *Nutrition Week*, Washington, D.C.: Community Nutrition Institute, 21, April 5, pp. 2-3.

Cristóvão A. and Pereira, F. (1995). Agricultura Biológica: Uma Alternativa para Trás-os-Montes. *Revista de Estudos Transmontanos*, nº 6, pp. 239-268.

DIO certification organization (2000). *Transactions Report* 1999.

ECOVIN: Information: 15 Jahre ECOVIN. 2000.

Eshuis, J. & J. Buurma (1998), *Biologische landbouw in de Wieringermeer*, Den Haag: Landbouw Economisch Instituut.

EUROPA (2000). Website: www.europa.eu.int/comm/dg06/envir/report.

EUROPE NEWS, 3 / 1997, p. 4.

European Commission (1997). *Agriculture and environment. CAP working notes*. Directorate-General for Agriculture: Brussels.

European Union Council Regulations 2092/91, 2078/92, 950/97.

Eurostat (1999). Agriculture in the European Union. GraphAgri collection, Agreste eds. Luxemburg.

Eurostat (2000). EUROSTATISTICS: *Data for short-term economic analysis. monthly*, Vol.2.

Eurostat, *Farm Structure Survey* 1995.

FAO/IFOAM Meeting on Organic Agriculture (1998). Report. FAO, Rome, 19-20 March, 1998.

Ferreira, J. C., Strecht, A., Ribeiro, J. R., Soeiro, A. and Cotrim, G. (1998). *Manual de Agricultura Biológica. Fertilização e Protecção de Plantas para uma Agricultura Sustentável.* Lisboa: AGROBIO.

Firmino, A. (1998). Agricultura Biológica e Ensino: Relato de uma Experiência Inovadora. *Cadernos de Geografia*, n °17, pp.145-147.

Firmino, A. (1999a). Agricultura Biológica: Desafio e Utopia de uma Medida Agro-Ambiental. In *Actas do Congresso Desenvolvimento Rural - Desafio e Utopia*, pp. 243-254. Lisboa: Centro de Estudos Geográficos, Faculdade de Letras, UL.

Firmino, A. (1999b). Is Rural Sustainability Possible in Portugal? In I. Bowler, C. Bryont and A Firmino (Eds.), *Progress in Research on Sustainable Rural Systems*, pp. 110-119. Lisboa: Centro de Estudos de Geografia e Planeamento Regional, UNL.

Fischer, H.; Michelsen, G. (1997): *Umweltbildung: Ein Problem der Lehrerbildung.* Frankfurt.

Foster, C. and N. Lampkin (1999). *European Organic Production Statistics 1993-1996.* Hohenheim: Universitat Hohenheim.

Fotopoulos C., (1995). Economic Perspectives in Biological Agriculture, *Geotechnica*, 363 (in Greek).

Fotopoulos, C; Pantzios C.J, (1998). *An Assessment of Current Conditions and Perspectives of the Organic Farming Sector in Greece.* Agricoltura Mediterranea, 128(2), p. 142-152.

Fotopoulos, C. (1999). The organic farming production system as an alternative solution for the development of the Greek countryside. eds. of the National Agricultural Research Foundation in Greece.

Gerber, A. (1994): Die Berufsbildung im ökologischen Landbau. In: *Beiträge zur 4. Wissenschaftlichen Tagung Ökologischer Landbau.* Bonn.

Graf, D. (1997): Grußwort in: *Umweltbildung in Hessen.* Hrsg.: Naturschutzzentrum Hessen. Wetzlar.

Guerra, Mário Jorge Fernades (1998). *O Trabalho de Laboratório, a Atitude Científica e a Educação Ambiental: Um Estudo na Área das Técnicas Laboratoriais de Biologia.* Vila Real: UTAD.

Guia dos Produtos de Qualidade 2000. Lisboa: Ligalu Edições.

Heinze, K. (2000): Öko-Landbau braucht Nachwuchs. In *Bioland* 3/2000.

Hessisches Landesamt für Regionalentwicklung und Landwirtschaft (1997): Verordnung über die Berufsausbildung zum Winzer/zur Winzerin.

Homer, M.P. and Kahle, R.L. (1988): «A Structural Equation Test of the Value - Attitude - Behaviour Hierarchy», *Journal of Personality and Social Psychology*, Vol. 54(4), pp. 638-646.

Hutchins, R.K. and Greenhalgh, L.A. (1997): «Supply and Demand Factors for Organic Produce», *American Journal of Agricultural Economics*, Vol. 78(August 1996), pp. 647-655.

IFOAM (1999). *Ecology and Farming*. Vol. 20.

Kaldis, P. and C. Gardelli, (1996). Market and Marketing Aspects of Organic Farming Products of Greece in K. Mattas, E. Papanagiotou and K. Galanopoulos (eds.), *Agro-Food SMEs in a Large Integrated Economy* (Kiel: Wissenschaftsverlag Vauk), p. 124-31.

Kern, B.; Nickenig, R. (1990): *Zahlen und Fakten: Die deutsche Weinwirtschaft im internationalen Vergleich*. Bonn.

Kiritsakis, A.K. *The Olive Oil*. ASE, Thessaloniki, 1993.

Koutsouris, A. (1997). Pedagogical debates – agricultural education and training challenges: from production to sustainability. Proceedings, Wageningen Agr. University / STOAS. 25-27 September, 1997.

Lampkin, N., C. Foster & S. Padel (1999), *The policy and regulatory environment for organic farming in Europe: country reports'*, Stuttgart: Universität Hohenheim.

Lampkin, N., C. Foster and S. Padel (1999). *The policy and regulatory environment for organic farming in Europe. Country reports*. Hohenheim: Universitat Hohenheim.

Lampkin, N., C. Foster, S. Padel and P. Midmore (1998). *The policy and regulatory environment for organic farming in Europe*. Technical Deliverable: Ri, FAIR3-CT96-1794. Welsh Institute of Rural Studies, Aberystwyth University, Wales.

Lampkin, N., C. Foster, S. Padel and P. Midmore (1999). *The policy and regulatory environment for organic farming in Europe*. Hohenheim: Universitat Hohenheim.

Legg, W. (1999). *Sustainable Agriculture: An Economic Perspective*. OECD study.

Lorscheid, F. & P. van Rijsingen (1998): '*Van druivenserre tot wijnkasteel. Wijngaarden in Nederland en Vlaanderen*', Angeren: Wijngaardeniersgilde.

Ministério da Agricultura, do Desenvolvimento Rural e das Pescas (MADRP) (1995). *Agricultural Numbers 1997*. Lisboa: Author, IEADR.

Ministério da Agricultura, do Desenvolvimento Rural e das Pescas (MADRP) (1998). *Indicadores Económicos do Sector Agrícola 1989-1994*. Lisboa: Author, GPPAA.

Ministério da Agricultura, do Desenvolvimento Rural e das Pescas (MADRP) (1999). *Panorama Agricultura 1998*. Lisboa: Author, GPPAA.

Ministry of Education (1999). Technical Vocational Schools. Athens.

National Statistical Service of Greece (2000). Data from the Statistical Yearbook.

National Statistical Service of Greece (2000). Education Statistics.

Neuerburg,W.; Padel, S. (1992): *Organisch-biologischer Landbau in der Praxis*. München.

OGEEKA, Ministry of Agriculture, (1999): unpublished data.

Papadaki-Klavdianou, A., Giasemi, E. and Tsakiridou, E. (2000): «Environmental attitudes of Integrated Pest Management greenhouse producers in Greece», International Advances in *Economic Research*, Vol. 6 (2), pp.306-315.

Papadaki-Klavdianou, A., Tsakiridou, E. and Giasemi, E. (1999): «Comparison of perceptions and implementation of integrated pest management (IPM) practices between IPM and conventional farmers of greenhouse vegetables in Northern Greece», *Environmental Conservation*, Vol. 27 (1), pp. 36-42.

Patrício, M. T., A. Valadas de Lima and E. Sampaio (2000). *Tradução e Implementação das Medidas Agro-Ambientais em Portugal*. Lisboa: ISCTE/CIES.

Pereira, F.A. (1995). *Novas Dinâmicas de Diversificação da Agricultura Transmontana. O Caso das Actividades Agrárias Não Convencionais*. Tese de Mestrado em Extensão e Desenvolvimento Rural. Vila Real: UTAD.

Pieters, M. (1997): Akzente in der Umwelterziehung verschiedener europäischer Länder. In: *Umweltbewußtsein und Umweltbildung in der Europäischen Union*. Hamburg.

Platform Biologica (2000), *Advies Plan van Aanpak Biologische Landbouw*, Utrecht: Platform Biologica.

Platform Biologica (2000), *EKO-monitor*, Utrecht: Platform Biologica.

Schleicher, K. (1995). *Umweltbewußtsein und Umweltbildung in der Europäischen Union*. Hamburg.

Siardos, G (1992). *Agricultural Extension*. Zitis eds, Thessaloniki.

Siardos, G (1993). Sustainable agriculture and development. *Geoponika*, 348, pp. 165-172 (in Greek).

Silva, M. E. (2000). *Agricultores e Agriculturas Biológicas em Produção de Azeitona para Azeite na Região de Trás-os-Montes e em Horticultura e Vinha na Região de Entre Douro e Minho*. Tese de Mestrado em Agricultura, Ambiente e Mercados. Vila Real: UTAD.

Statistisches Bundesamt (1997-1999):*Statistische Jahrbücher der Jahre 1997-1999*. Stuttgart.

Thimm, C., Karst, C. and Schart, J. (1992): *«New Marketing Opportunities for Organic Produce in Northern Europe»*, a study for EEC Commission, pp. 3-33.

Tsoutsoulopoulos, K. (1999). Organic olive oil. *Olive and olive oil Journal*, Vol. 10, pp. 40-46.

Tzimitra-Kalogianni, I., Papadaki-Klavdianou, A. and Tsakiridou, E. (1999): «Consumer behaviour and information on organic and hygiene products», *Medit*, Vol. 2, pp. 10-15.

Tzimitra-Kalogianni, I., Papadaki-Klavdianou, A. and Tsakiridou, E. (1999): «Consumer Attitudes Towards Wine and Wine Routes in N. Greece», *British Food Journal*, pp. 884-892.

Von Schnurbein, F.H.M. and Weipert, W. (2000). *White paper of the European social partners on employment in Agriculture*. European Commision, DG Employment and Social Affairs, LinE GmbH eds., Bonn/Brussels.

BEST COPY AVAILABLE

www.agro.wau.nl *(Wageningen University)*
www.bvenet.nl *(Schools for vocational education)*
www.ecomarkt.nl *(Association for biodynamic agriculture and food)*
www.kraaybeekerhof.nl *(BD Training Centre Kraaybeekerhof)*
www.minlnv.nl *(Department of Agriculture)*
www.platformbiologica.nl *(Platform Biologica)*
www.skal.com *(SKAL certiying organization)*
www.tuinbouw.nl *(Branch organization Horticulture)*
www.warmonderhof.nl *(BD Training Centre Warmonderhof)*
www.wijninfo.nl *(Branch organization Wine cultivation - Wine Information Centre)*

Cedefop (European Centre for the Development of Vocational Training)

Quality of agricultural products and protection of the environment: training, knowledge dissemination and certification

Synthesis report of a study in five European countries

Papadaki-Klavdianou A.
Menkisoglou-Spiroudi O.
Tsakiridou E.

Luxembourg:
Office for Official Publications of the European Communities

2003 – VI, 191 pp. – 17.5 x 25 cm

(Cedefop Reference series; 38 – ISSN 1608-7089)

ISBN 92-896-0174-4

Cat. No: TI-49-02-361-EN-C

Price (excluding VAT) in Luxembourg: EUR 25

No of publication: 3027 EN

195

The main objective of the study is to examine existing environmental education and agricultural practices friendly to the environment. In addition, it aims to define new knowledge qualifications related to environmental issues in producing alternative agricultural products without agrochemicals (organic farming) and how these qualifications can best be acquired. To meet these objectives, specific questionnaires were designed for each category of people involved in the chain - organic farmers, certification institutes, inspectors, consultants, teachers, retailers, and consumers.

The main findings of the study is that education, training, innovation transfer, and information on producing and distributing certified organic products are important for all the bodies involved in the chain, regardless of educational level.

Results suggest that several curricula can be designed and implemented with expected rapid increases in the market for certified organically produced products within the EU.

04 05 16 11-49-02-361-EN-C

EN

Quality of agricultural products and protection of the environment: training, knowledge dissemination and certification

Synthesis report of a study in five European countries

Papadaki-Klavdianou A.
Menkisoglou-Spiroudi O.
Tsakiridou E.

CEDEFOP

European Centre for the
Development of Vocational Training

Europe 123, GR-570 01 Thessaloniki (Pylea)
Postal address: PO Box 22427, GR-551 02 Thessaloniki
Tel. (30) 23 10 49 01 11, Fax (30) 23 10 49 00 20
E-mail: info@cedefop.eu.int
Homepage: www.cedefop.eu.int
Interactive website: www.trainingvillage.gr

Price (excluding VAT) in Luxembourg: EUR 25 3027 EN

OFFICE FOR OFFICIAL PUBLICATIONS
OF THE EUROPEAN COMMUNITIES

L-2985 Luxembourg

ISBN 92-896-0174-4

196

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☐

This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").